

温水逃がし弁のフラッシング現象に関する研究

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学 位 論 文

温水逃がし弁のフラッシング現象
題目 に関する研究

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記号の意味

1. 英文字

A ; 熱の仕事当量

$B_{(P_1)}$; P_1 , ρ_1 を一定とした場合の等エントロピ膨張パラメータ $=1/\omega$

C ; 比熱、または速度

C_P ; 定圧比熱

C_V ; 定容比熱

F_{LP} ; フィッティング付き時の圧力回復係数

F_R ; レイノルズ数定数

F_F ; 臨界圧力比係数

F_p ; 配管形状係数 T ; 絶対温度

g_c ; 重力の加速度

G ; 質量流量、または質量流束

G_c , G^* ; 臨界質量流量、または臨界質量流束

h ; 比エンタルピ

J ; 弁の流出面積

N_1 ; 数値定数

P ; 絶対圧力

ΔP ; 弁の前後差圧

$[P_c]$; 熱力学的臨界圧力

P_c ; 臨界圧力

S ; 相間スリップ比

V ; 比容積

X ; クオリティ

2. ギリシャ文字

α ; 容量係数

γ ; 高温水の比重量

κ ; 許容圧力降下係数

η ; 圧力比

η_{o*} ; 見掛けの臨界圧力比

η_o ; 臨界圧力比

η_s ; 飽和圧力比

ρ ; 流体密度

ω ; Correlation parameter

ϕ ; Flow parameter

3. 添え字

a ; 弁入口(よどみ)の状態

e ; 弁出口(ノズル出口)の状態

c, l, c ; 臨界状態

f, l ; 液相

g ; 気相

s, v ; 飽和状態

平均

 ρ_{HNE} ; HNEモデルでの液相の物性値

- ① 実用式の分類
- ② 理論式の分類
- ③ 吹き出し係数に対する理論式と実用式の比較
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1. まえがき

弁内を気液二相流体が流れ、弁縮流部にフラッシングを生じて気液二相流体となる時、流量がある状態から飽和し臨界状態になる。フラッシングを伴わないで液体の单相流体が弁を通過する場合には、エネルギー式と連続式から求めた流量式は実際とよく一致するが、気液二相流体がフラッシングを伴って弁を通過し流れがチョーキングを起こす場合には、前述の流量式はもはや適用できなくなる。

逃がし弁や安全弁の吹き出し容量の決定には、この事を考慮しなければならない。逃がし弁や安全弁の吹き出し流量を誤って推定した事が原因となり必要吹き出し流量が不足し、温水ボイラーが破裂した例がある。また、原子炉において逃がし弁の作動不良で出力制御に不安定を生じる等その影響は大きなものとなる。

逃がし弁における臨界状態の判別には臨界圧力の推定が必要であり、その推定には従来から実用式がもちいられている。しかし、弁における臨界圧力の推定を二相流モデルと関係づけ検討したものは比較的少ない。また、そのモデルを検討するうえで弁の吹き出し係数の値が必要となる。

本研究は、温水逃がし弁の臨界流量を求める実用式および、各種熱流体力学的モデルを実験結果から検討し、臨界圧力比および吹き出し係数等について考察したものである。

2. 本研究の方針

2-1 温水逃がし弁の各種実用式の比較

実用式として a) Burnell の式 b) G.F. Brockett & C.F. King の式 c) IEC の式を取り上げた。これらを表 1 に示す。

表 1 において、a) は等エントロピ流れを仮定し、縮流部までは蒸発せず液単相が存在するとしてベルヌーイ式を用いた非平衡モデルに修正したものである。ここで、臨界圧力は水の表面張力の関数になることを用いて G_c を計算している。

b) は連続の式とエネルギー式から臨界流量を求め、これに流体のサブクール度の影響を表す係数 κ を実験的に決定式して G_c の計算をしている。c) は連続の式と運動量式から臨界流量を求め、これに流路形状、熱力学的因子による影響を各種係数として決定し G_c を計算するものである。

これら 3 実用式を実験的に比較検討する。

2-2 理論臨界流量式の検討

理論臨界流の式として、a) HEM (均質平衡モデル) b) HNEM (均質非平衡モデル) c) SEM (スリップ平衡モデル) について、各モデル間にどのような相違が表れるのかを基礎式としてエネルギー式または運動量式を用いた場合に付いて実験結果から検討を行う。これら各モデルを整理したものを表 2 に示す。表 2 において、a) は気液間に滑りの無い均一に混合した均質流体で、気液間は熱平衡に達し、等エントロピ変化を行うと仮定したもの。7) では連続の式とエネルギー式より臨界流量を計算する。1) では連続の式と運動量式より臨界流量を求める。b) は HEM の熱平衡クオリティ X を実験的に定め、熱非平衡の程度を表すパラメータを X の関数として与え、かつ気液等速を仮定し G_c を計算するものである。同様に 7) と 1) が有る。c) は 7) において臨界点におけるスリップ比を仮定すると、流量は圧力のみ関数になる関係を用いて G_c を計算するものである。

2-3 臨界圧力、および吹き出し係数の考察

臨界圧力 P_c をBurnell、G.K.Brockett & C.K.King、およびIECの式から求めて比較し、次にこれを基に臨界流量 G_c を計算し、吹き出し係数 α を求め考察する。

添付書類参照。

表 1 実用式の種類

実用式	a)Burnellの式	b)Brockett & Kingの式	c)IECの式
	$G_c = \alpha \sqrt{2 \cdot \gamma (P_0 - (1-C)P_s)} \dots (1)$ $C = 0.294 \cdot \sigma (T_0) / \sigma (T) \dots (a)$ $\sigma (T_0) = 75.48 - 0.14 \cdot T_0 \dots (b)$ $(1-C) \cdot P_s = P_0 \dots (c)$ <p>式(1)は、SI単位系では、 $G_c = \alpha \sqrt{2 \gamma (P_0 - (1-C)P_s)}$</p>	$G_c = 50.4 \cdot \alpha \sqrt{\kappa \cdot \gamma_0 \cdot P_0} \dots (2)$ $\eta_{0*} = (P_0/P_0) \cdot (P_1/P_0) \dots (d)$ <p>式(2)は、SI単位系では、 $G_c = 50.4 \alpha \sqrt{\kappa \cdot \gamma_0 \cdot P_0}$</p>	$G_c = N_1 \cdot F_L \cdot F_R \cdot \alpha \sqrt{(P_0 - F_F \cdot P_s) / (\rho / \rho_0)} \dots (3)$ $F_F = 0.96 - 0.28 \sqrt{P_s / [P_c]} \dots (e)$ $P_c = F_F \cdot P_s \dots (f)$ $F_L = P_1 / P_0 \dots (g)$
記号の意味	G_c : 臨界質量流束 C : 表面張力に関する係数 σ : 表面張力 T : 絶対温度 α : 吹き出し係数 κ : 許容圧力降下係数 γ : 比重量 P : 絶対圧力 η_0 : 臨界圧力比 η_{0*} : 見かけの臨界圧力比 N_1 : 定数 F_F : 臨界圧力比係数 F_L : 圧力回復係数 F_R : レイノルズ数係数 ρ / ρ_0 : 相対密度 $[P_c]$: 熱力学的臨界圧力(225.56 ata) [添え字は次の状態での局所値を表す。 0 : 弁入口 1 : 弁出口 s : 飽和 c : 臨界圧]		
備考	等エンタルピー流れを仮定し、縮流部までは蒸発せず、液単相が存在するとして、ベルヌーイ式を用いた非平衡式モデルによる。臨界圧力は表面張力の関数になることを用いて G_c を求める。	連続の式とエネルギー式から臨界流量を求め、これに流体のサブクール度による影響を表す係数 k を実験的に決定し用いる。	連続の式とエネルギー式から臨界流量を求め、これに流路形状、熱力学的因子、摩擦等力学的因子、による影響を各種係数として決定し用いる。
参考文献	(6)	(2)	(3)

表2 理論式の分類

	HEM(均質平衡モデル)	HNEM(均質非平衡モデル)	SEM(スリップ平衡モデル)
基礎式	<p>7) 連続の式 $C_0/V_0=C/V=G\cdots(4)$ エネルギー式 $h_0-h=C^2-C_0^2\cdots(5)$ より、 $G=[\int -VdP]^{1/2}/V\cdots(6)$ 1) 連続の式と運動量式 $g(P_0-P)=G(C-C_0)\cdots(7)$ より、(SI単位) $V\cdot dP+G^2(V\cdot dV)=0.0$ $G=1/\sqrt{-dV/dP}\cdots(8)$ $V=V_f+X\cdot V_{fg}$, $h=h_f+h_{fg}\cdots(h)$</p>	<p>7) 同左。 均質凍結ベルヌーイ式と チョーキング状態からの 非平衡度を次の様に表す。 $V=X_0\cdot V_{00}+(1-X_0)\cdot V_{f0}\cdots(9)$ 1) 同左。 非平衡度を表す係数Nを実験的 に求めておいて、これを用いる。 $X_0<0.14$の時、$N=7\cdot X_0$ (i) $X_0>0.14$の時、$N=1$</p>	<p>7) 同左。 $V=[X\cdot V_0+(1-X)\cdot V_f]\cdot [X+(1-X)/S^2]$ $\cdots(10)$ $S=(V_0/V_f)^{1/3}\cdots(j)$</p>
記号の意味	<p>C: 流体速度、V: 比容積、G: 臨界質量流束、h: 比エンタルピー、P: 絶対圧力、X: クオリティ [添え字は次の状態の局所値を表す。 0: 弁入口側、無: 縮流部、f: 流体が液体、g: 流体が気体、 fg: 気液の物性値の差]</p>		
備考	<p>気液間にスリップの無い均一に 混合した均質流体で、気液間は 熱平衡にたつていて、等エン トロピー変化を行うと仮定。</p>	<p>熱平衡クオリティX_0を実験的に定 め熱非平衡の程度を表すパラメー タをX_0の関数として与え、気液等 速を仮定する。</p>	<p>臨界点におけるスリップ比を $S=(V_0/V_f)^{1/3}$と仮定すると、流量は圧力 のみの関数となるので、PとXを用いて 臨界流量を計算する。</p>
参考文献	(1),(3),(5),(6),(9)	(8),(11),(16),(19)	(13),(17)

3. 実験装置及び実験方法

3-1 実験装置

実験装置の概要を図1に、試験逃がし弁の構造を図2に示す。

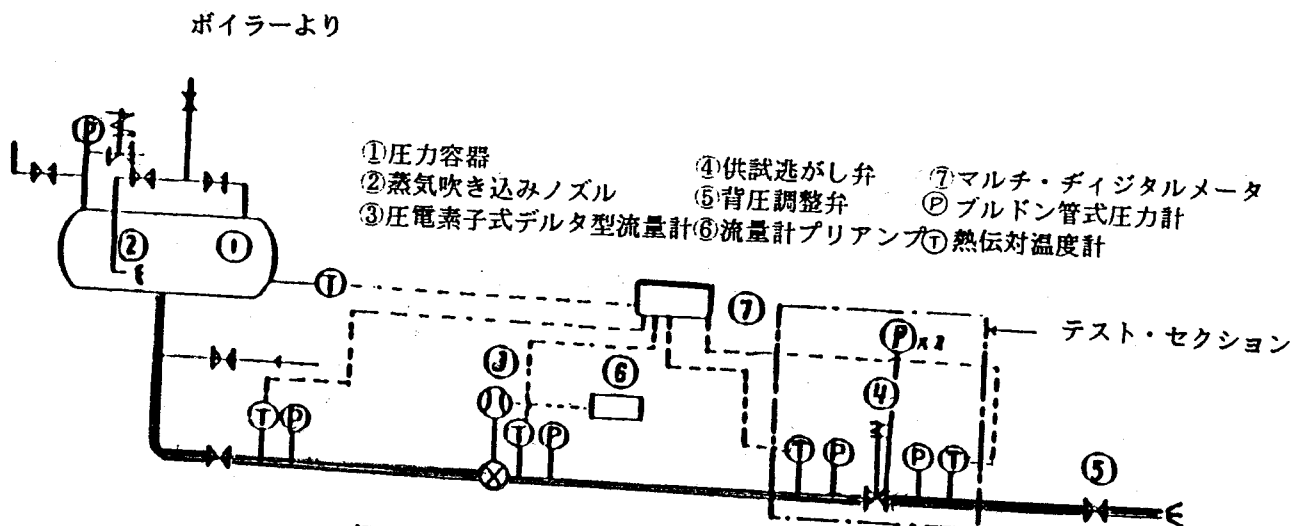


図 1 実験装置の概要

単位 mm

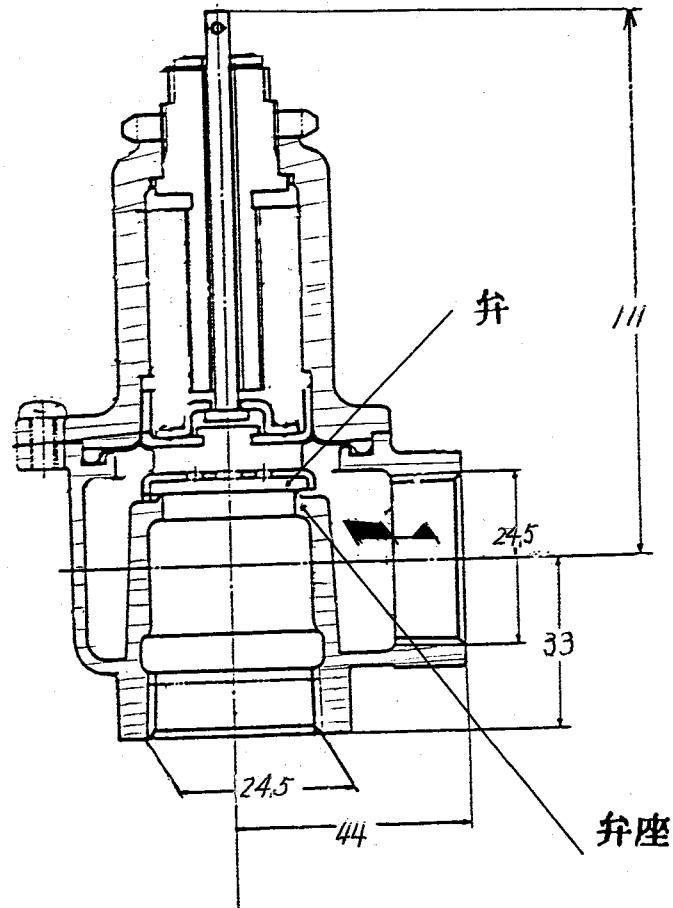


図 2 供試逃がし弁の構造

図1に示す実験装置の主な構成は、圧力容器①、蒸気吹き込み用ノズル②、レデューサー、エキスパンダー、スリーブ(内径 ϕ 16mm、2組)、圧電素子式流量計③、試験逃がし弁④、及び背圧調整用手動弁⑤、流量計用プリアンプ⑥、熱電対温度計用デジタルマルチメータ⑦からなっている。

テスト・セクション内試験弁の上流、下流側の配管はすべて呼び径 ϕ 25.4mm、Sch 40とし、流量計③(圧電素子式デルタ型流量計、VAV1015-C1C1-4112,渦形)前後各1m配管には、内径を一樣にするためにスリーブを内挿した。

試験逃がし弁のサイズは、呼び径1インチ、弁リフト0.8mmのダイヤフラム・シール形ディスク式逃がし弁(弁形式:アングル弁、メタル・シート)を、ねじ込み継手で配管系に取り付けた。

図2に示す試験逃がし弁は、ダイヤフラム・シール型ディスク式逃がし弁(弁形式;フシマンR101-1BHA型、青銅5K1インチねじ込みアングル弁、メタルシート)、弁呼び径1"、設定リフト0.8mmと2.4mmである。

試験弁は噴気テスト・レバー、ばね受け、調節ばね、揚弁棒を取り外して改造し、弁押し要具(直径 ϕ 20mm)を作成、この上部にねじを加工して、弁リフトを調節、固定可能にした。

なを、その他実験装置の詳細についてはJIS規格のJIS B8414-1982(温水機器用逃がし弁)、B8210(蒸気用及びガス用ばね安全弁)、B2005-1987(バルブの容量係数の試験方法)によった。

図3は試験逃がし弁の流れ方向に沿っての流路断面積の変化を示したものである。なお、弁のリフトは0.8mm開放状態である。

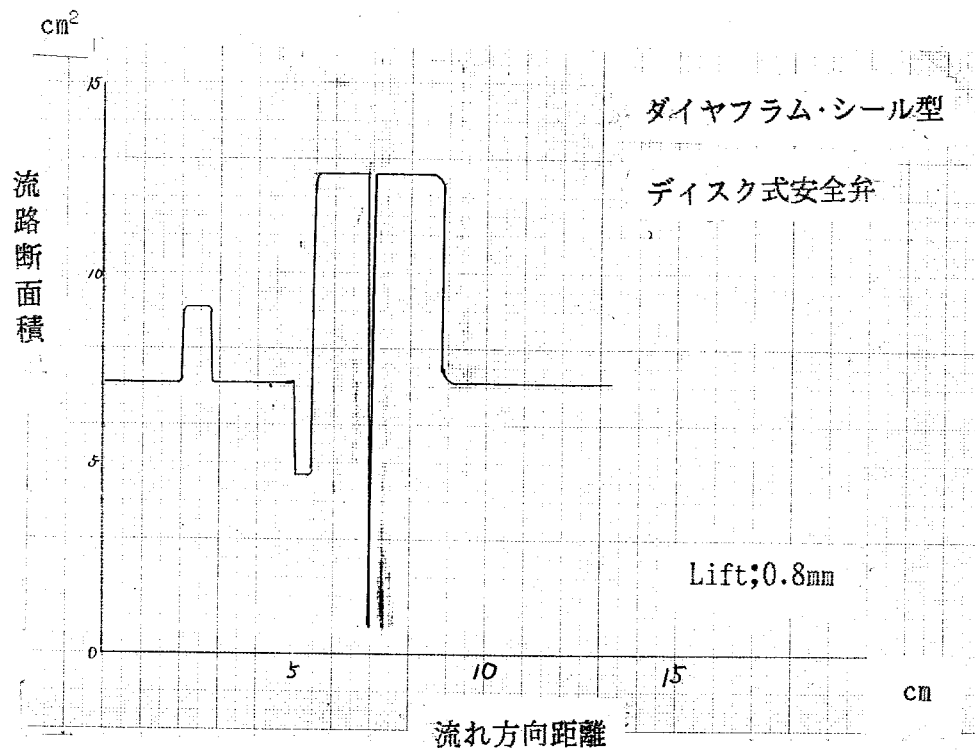


図 3 試験逃がし弁の流路断面積変化

3-2 実験方法

最初に水を 0.596m^3 の圧力容器①に約 0.4m^3 張水して、圧力容器低部に蒸気をノズル②により注入混合し水を設定温度まで加熱する。次に、圧力容器頂部よりボイラー圧力に相当する蒸気を加えて設定圧力にした後、容器内温水を配管系に導く。そしてテスト・セクション内の試験逃がし弁④入口の温度、圧力を一定に保ちながら逃がし弁入口、出口の圧力差を変えて流量を変え計測した。バロメーターにより実験時の気圧を読み取り、ゲージ圧力から絶対圧力に換算し、また水頭圧の補正を行なった。温水出口は大気開放とした。

圧力と温度は、P,Tで示す圧力容器及びテスト・ラインの各点で計測した。温度測定には、銅-コンスタンタンの熱電対を用い、デジタル・マルチメーターで表示させた。

静圧はブルドン管式圧力計を用い、コンパクト・ビデオムービー(GR-C7)で計測、保存した。差圧の制御には、試験弁④下流側の手動弁⑤を用いた。

この方法により、 $0.0\sim 8.0\text{kg/cm}^2$ の圧力範囲と、 $21.0\sim 160.0^\circ\text{C}$ の温度範囲の各種データを得る事ができた。テスト・ランは44ラン(287点)で、その内、流量が飽和したのは22ラン(143点)であった。

弁リフトは 0.8mm と 2.4mm の2通りとして、双方に付いて各データを計測した。

この時の弁通過面積は 0.6283mm^2 と、 1.885mm^2 であり、実験中、試験弁入口圧力を 3.0 kgf/cm^2 と 4.0 kgf/cm^2 一定に保った。

注) 流量計の検定の一例を図4に示す。

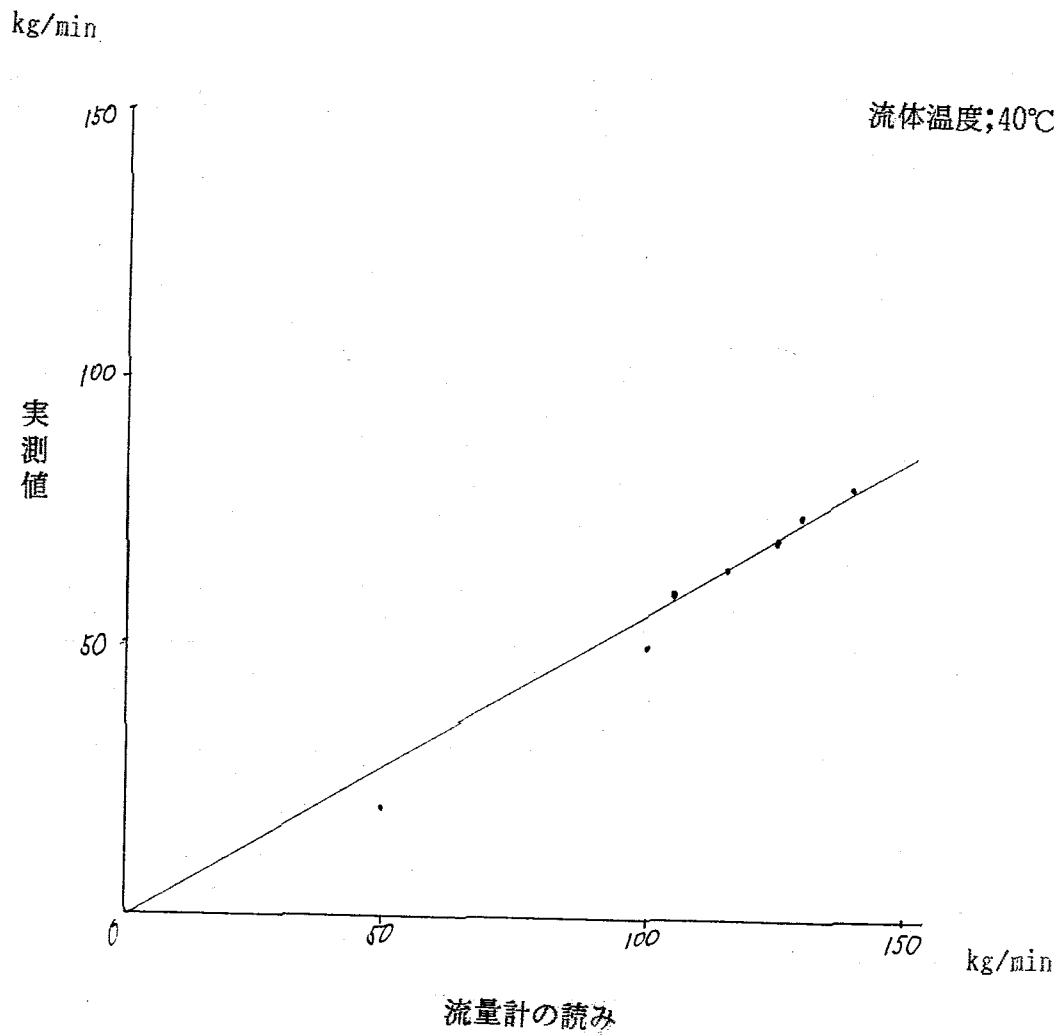


図 4 流量計の検定

4. 実験結果および考察

4-1 圧力分布

図5～9に弁を通る流体の弁内圧力分布を示す。

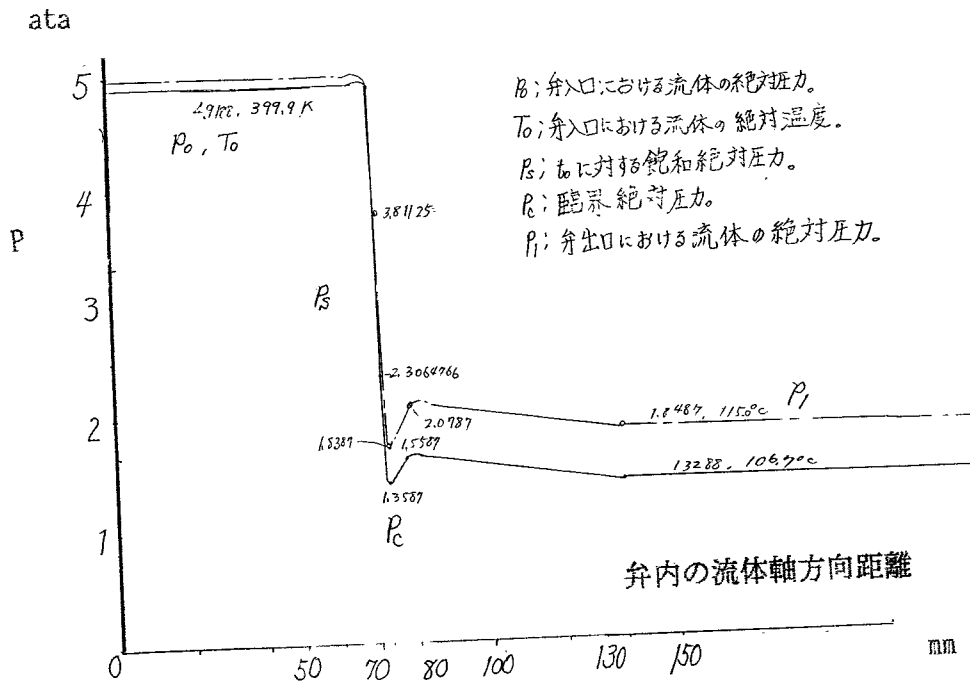


図 5 圧力分布測定例

図中の記号は、 P_0 ;弁入口における流体の絶対圧力、 T_0 ;弁入口における流体の絶対温度、 P_s ; T_0 に対する飽和絶対圧力、 P_c ;臨界絶対圧力、 P_1 ;弁出口における流体の絶対圧力である。

なを、フラッシング現象は P_1 が P_s より小さい値の状況のときに生じる。 P_1 が P_s より大きい場合にはキャビテーションとなり両者を区別している。

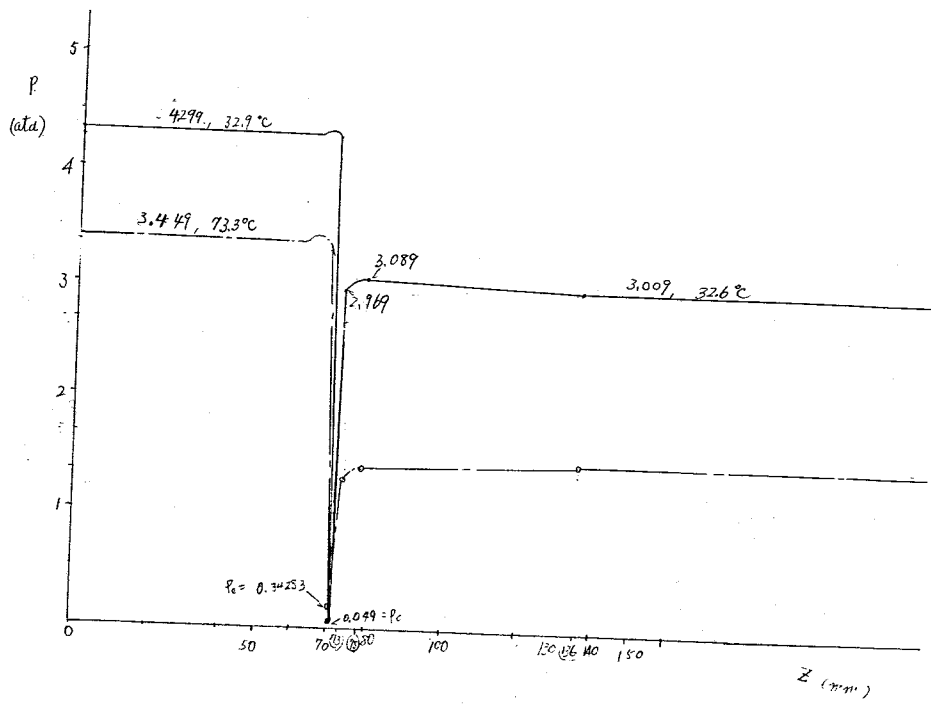


図 6 压力分布測定例

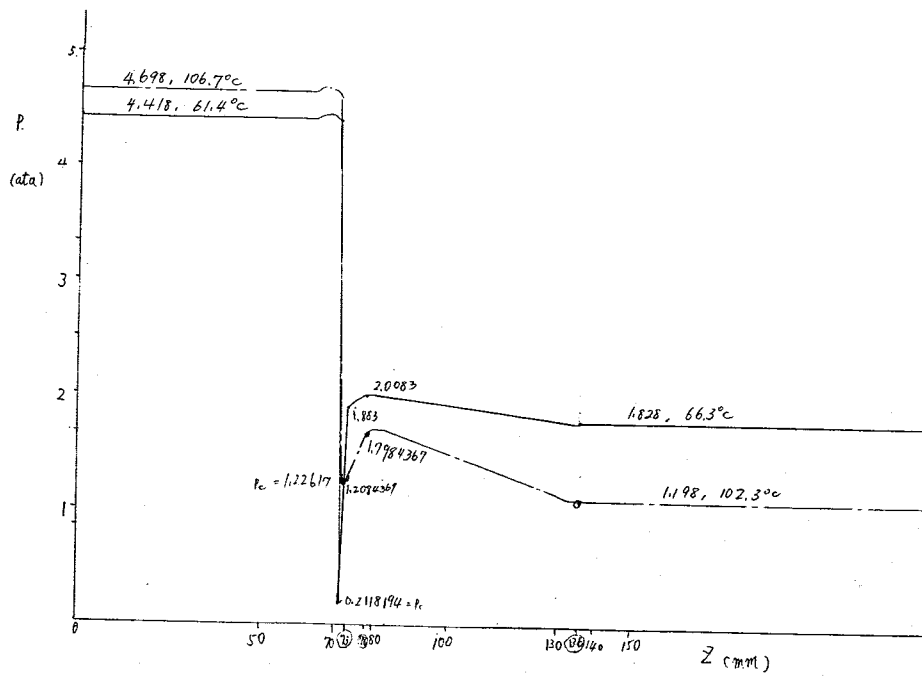


図 7 压力分布測定例

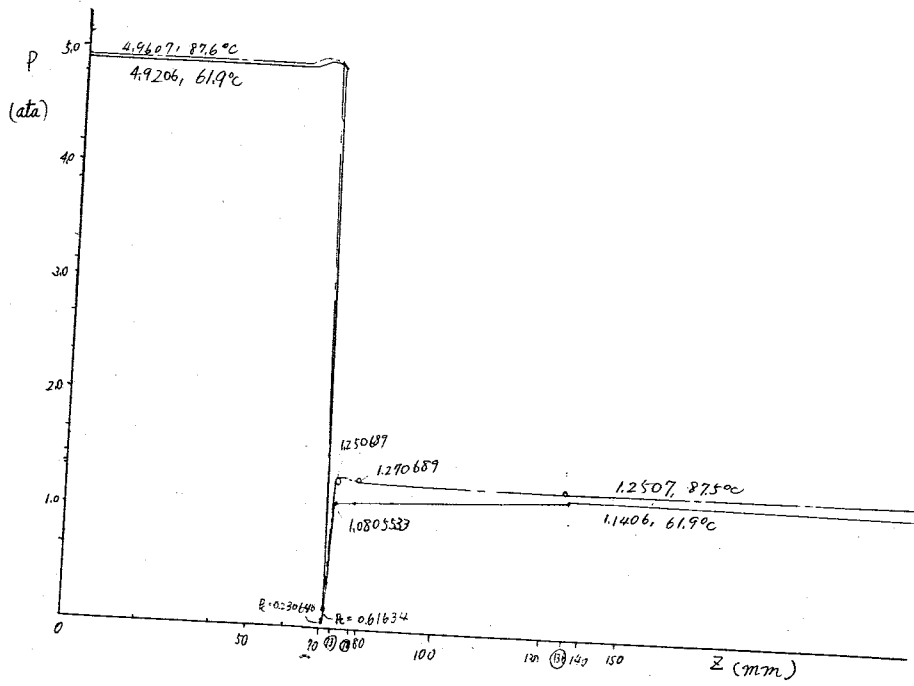


图 8 压力分布测定例

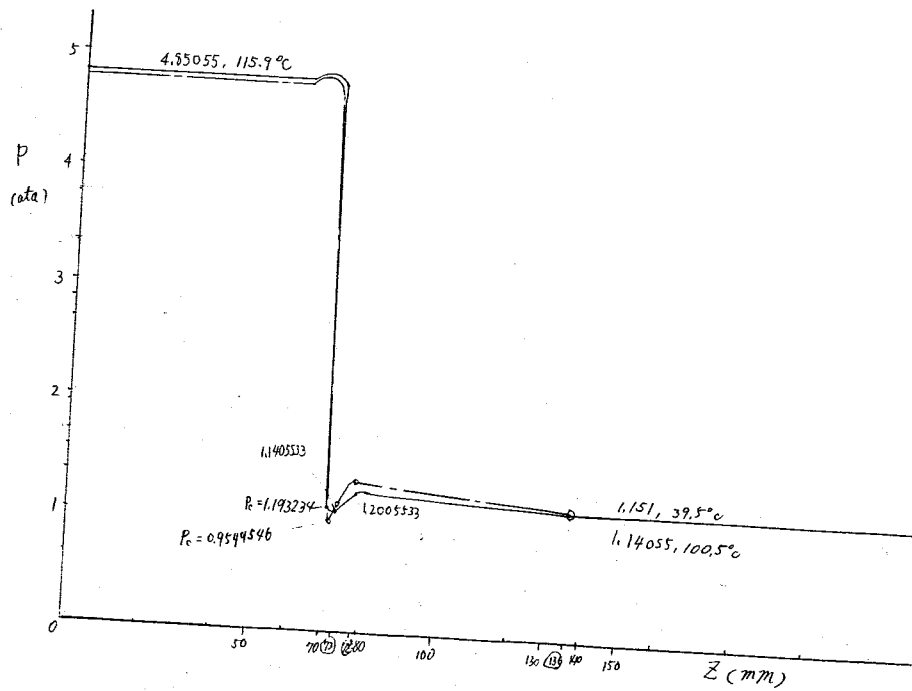


图 9 压力分布测定例

4-2 臨界流量の発生状況

図10および11に流量と弁の圧力降下 ΔP (弁前後の圧力差)との関係を、弁入口温度一定の場合に付いて示す。 両軸とも対数目盛りである。 図10は弁入口圧力が 4kg/cm^2 の状態を、また、図11は 3kg/cm^2 の状態を示している。

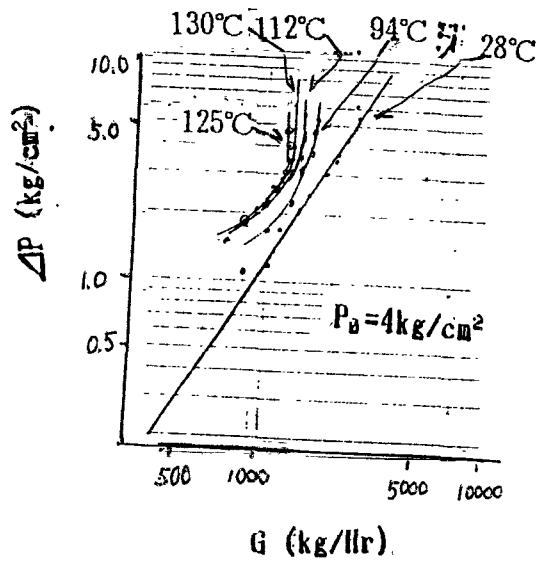


図 10 圧力差と流量の関係

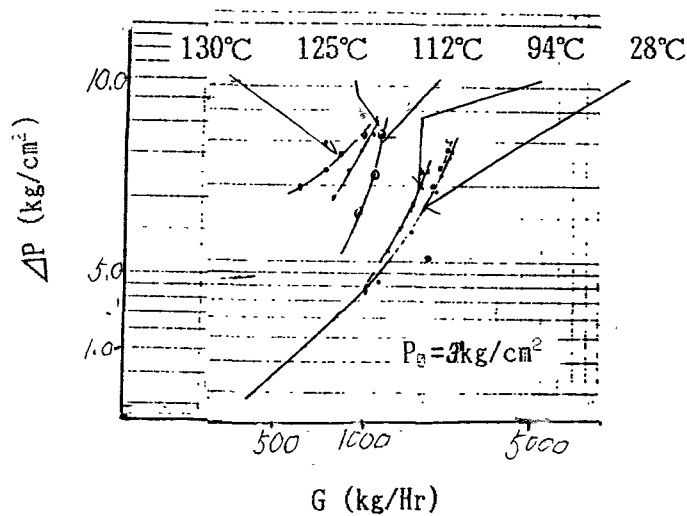


図 11 圧力差と流量の関係

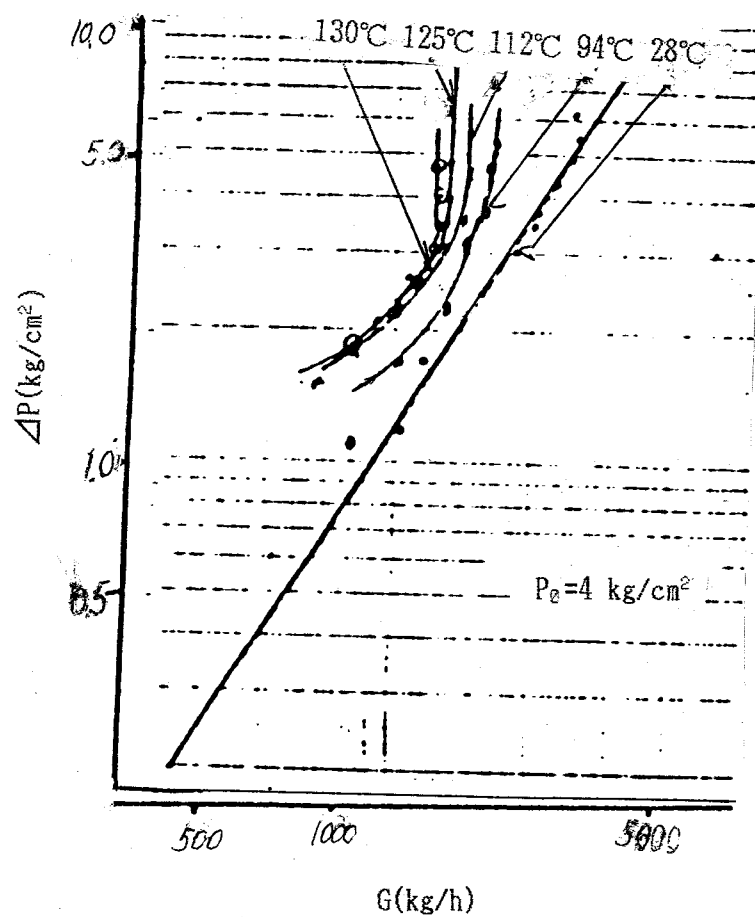


図10弁前後差圧と流量の関係

図中の直線は低温でフラッシングを伴わない状態である。圧力4 ataにおける水の飽和温度は140.0℃であるので、弁入口温度が140.0℃以下に保たれ、圧力が4 ataより低くならないければ、水は試験弁入口までは、液体の状態を保っている。フラッシングが起こると直線のある点から離れ、圧力差がそれ以上増しても流量は増加しなくなり縦軸と平行になる。すなわち、臨界状態となる。

この一定になる弁前後の圧力差($P_0 - P_c$)を”臨界圧力降下”と言い、入口絶対圧力に対する出口絶対圧力の比 P_1/P_0 を”見掛けの臨界圧力比”と言う。

水では26.7℃～160.0℃の範囲では、0.15～0.88の見掛けの臨界圧力比を持っている事が分かっている。⁽²⁾

この説明として、液体が弁の縮流部に近ずくと、流速が大きくなり、オリフィスの縮流部に相当する出口の点で最大になる。流速が増すと、静圧水頭は速度水頭に変わる。差圧が大きくなり流速が増すと、遂に最高流速の点の静差圧が、流体のその温度における蒸気圧より低くなる、そうすると蒸発による体積増加は流速を増大させ難くするので、差圧がそれ以上大きくなっても、流量は増えない。

図 11および、12の関係から、各温度に対する臨界圧力降下($P_0 - P_c$)が分かれば、弁の容量決定において、流量の限界が分かることになる。

4-3 サブクール度と見掛けの臨界圧力比の関係

サブクール度と見掛けの臨界圧力比の関係を図12および13に示す。ここで、サブクール度とは弁の入口圧力 P_0 に対する飽和温度 t_s と弁入口の実際の温度 t の差($t_s - t$)= Δt を表す。

サブクール度 Δt °Cと見掛けの臨界圧力比 $P_1/P_2 = \eta_o^*$ の間には、 Δt の関数となる臨界圧力降下が存在することがわかる。ここで、見掛けの臨界圧力比 η_o^* は $P_1/P_2 = (P_o/P_0) \cdot (P_1/P_o)$ で示される。

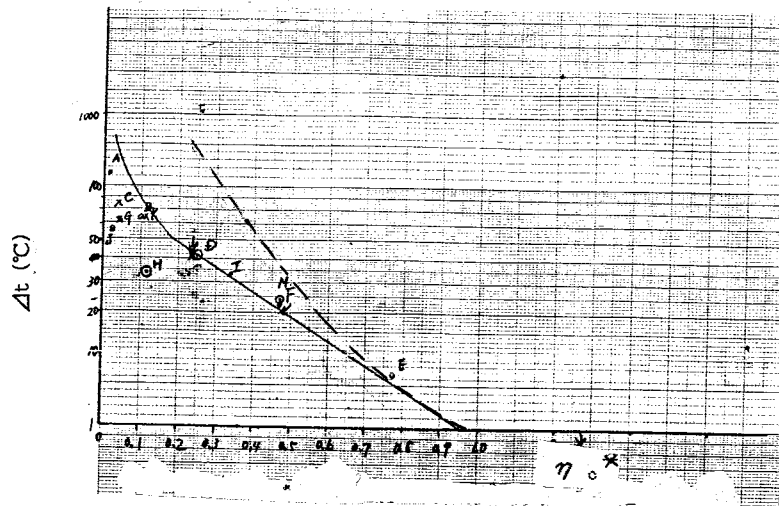


図12 サブクール度と見掛けの臨界圧力比の関係(試験弁入口圧力 3.0 kgf/cm^2)

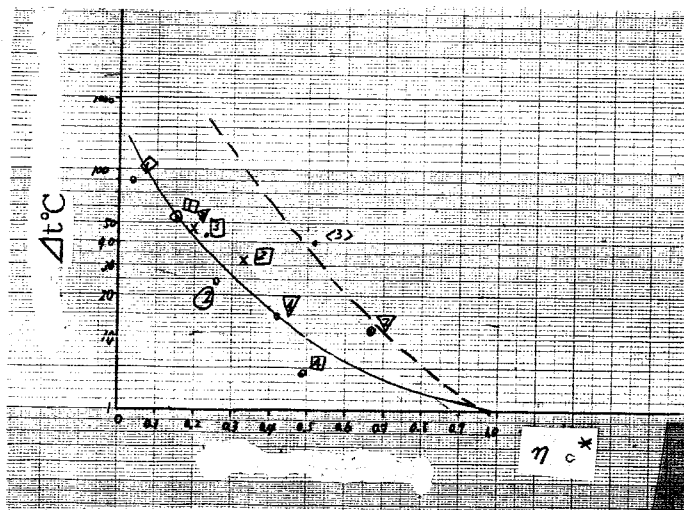


図13 サブクール度と見掛けの臨界圧力比の関係(試験弁入口圧力 4.0 kgf/cm^2)

図中の破線はG.F.Brockett & C.F.Kingの実験データ⁽²⁾を示したものである。

従って η_0^* は臨界圧力比 $\eta_0 (=P_0/P_e)$ と圧力回復係数 $F_L (=P_1/P_e)$ の値が与えられれば、求まることになる。そして、 η_0^* あるいは η_0 、 F_L が推定できれば臨界流量を予測することが可能となる。

次に、 η_0 について二相流モデルから考察する。

5. 臨界圧力比の均質平衡モデルによる考察

次の仮定に立つて、Fauske⁽¹⁹⁾ らと同様な方法によって二相均質平衡臨界流を求める式を導く。 まず、次の仮定をおく、

- 仮定
- 1. 等エントロピ流れ。
 - 2. 熱力学的に平衡している。
 - 3. 飽和していて、気液各相は等速度に達している。

連続の式とエネルギー式より、

$$G = (2 \cdot \int_{P_0}^P -v \, dp)^{1/2} / v \quad \dots\dots\dots(11)$$

このGの最大値G*が臨界質量流束となる。

(11)式をサブクール領域[I]と飽和二相領域[II]に分けて、

$$(1/2) \cdot (G \cdot v) = - \underbrace{\int_{P_0}^{P_s} V_{f,0} \, dp}_I - \underbrace{\int_{P_s}^P v \, dp}_II \quad \dots\dots\dots(12)$$

液体を非圧縮性とする、

$$[I] = V_{f,0} \cdot (P_0 - P_s) \quad \dots\dots\dots(13)$$

飽和二相領域での状態近似式(12)は、⁽⁵⁾⁽¹²⁾

$$V/V_{f,0} = \omega (P_s/P - 1) + 1 \quad \dots\dots\dots(14)$$

ここに、相関パラメーター (Correlation parameter) ω は、次の式で定義される。

$$\omega = (C_{f,0} \cdot T_0 \cdot P_s / v_{f,0}) \cdot (v_{fg,0} / h_{fg,0})^2 \quad \dots\dots\dots(15)$$

ここで、入口側の弁入口温度 T_0 に対する飽和線上で全ての物性値をとる。

$C_{f,0}$ は液体のよどみ状態における定圧比熱。

T_0 はよどみ状態の温度。

P_s は飽和圧力。

$h_{fg,0}$ はよどみ状態の蒸発潜熱。

$v_{f,0}$ はよどみ状態の液相の比体積。

$v_{fg,0}$ はよどみ状態の気液相間の比体積の差。

式(14)、(15)を式(12)に代入すると、

$$[\Pi] = V_{f0} [\omega \cdot P_s \cdot \ln(P_s/P) - (\omega - 1)(P_s - P)] \quad \dots (16)$$

式(13)～(16)および次の記号、

$$\eta \equiv P/P_0, \quad \eta_s \equiv P_s/P_0, \quad G^* = G/\sqrt{P_0}/V_{f0} = G/\sqrt{P_0 \cdot \rho_{f0}} \quad (\text{定常状態の質量流束})$$

を用いて、(11)式を整理すると、

$$G^* = \{2(1 - \eta_s) + 2[\omega \cdot \eta_s \cdot \ln(\eta_s/\eta) - (\omega - 1)(\eta_s - \eta)]\}^{1/2} / \{\omega(\eta_s/\eta - 1) + 1\} \quad \dots (17)$$

$dG/dp=0$ 又は、 $dG^*/d\eta=0$ として、 G, G^* の最大値を求めると、

臨界圧力比 $\eta_c \equiv P_c/P_0$ は、

$$(\omega + 1/\omega - 2)\eta_c^2/2\eta_s - 2(\omega - 1) \cdot \eta_c + \omega \cdot \eta_s \cdot \ln(\eta_c/\eta_s) + 3\omega \cdot \eta_s/2 - 1 = 0 \quad \dots (18)$$

この時の臨界質量流束は、

$$G_c^* = \eta_c / (\omega \cdot \eta_s)^{0.5} \quad \dots (19a), \quad G_c = \eta_c (P_0 \cdot \rho_{f0} / \omega \cdot \eta_s)^{0.5} \quad \dots (19b)$$

(18)式は η_c に関してニュートンの繰返し法により解けるが、対数項を2次のテーラー展開して、次の近似解を得る。

$$\eta_c = \eta_s \cdot (2\omega/2\omega - 1) [1 - \sqrt{1 - (2\omega - 1)/(2\omega \cdot \eta_s)}] \quad \dots (20)$$

但し、 $\eta_s \geq (2\omega - 1)/2\omega$

クラジウス・クラペイロンの式を用い、液相が非圧縮性であると仮定すると、チョーキング状態での物性値で表すことのできるパラメータ ω を用いて臨界質量流束を求めることができる。

一方、表2に示した実用式 b) Brockett & Kingの式と式(19b)を比較すると、

$$\eta_c (P_0 \cdot \rho_{f0} / \omega \cdot \eta_s)^{0.5} = 50.4 \cdot \alpha \{(P_0 + 1) \kappa \cdot \rho_{f0}\}^{0.5} \quad \dots (21)$$

$$\eta_c^2 \cdot P_0 \cdot \rho_{f0} / \omega \cdot \eta_s = 2540.16 \cdot \alpha^2 \{(P_0 + 1) \kappa \cdot \rho_{f0}\}$$

ここで、

$\kappa = 1 - \eta_c^*$: 許容圧力降下係数

$$\eta_c^* = P_1/P_2 = (P_0/P_2) \cdot (P_1/P_0) = \eta_c \cdot F_L$$

η_c^* : 見掛けの臨界圧力比 F_L : 圧力回復係数

よって、

$$\kappa = \eta_c^2 \cdot P_c / \{2540.16 \cdot \alpha^2 (P_c + 1) \omega \cdot \eta_s\} \quad \dots (21')$$

ここで、

$$P_c / (P_c + 1) (2540.16 \cdot \alpha^2) = \text{const.} \quad \text{とすると、}$$

$$\kappa \propto \eta_c^2 / \eta_s \cdot \omega$$

$$\kappa = J \cdot \eta_c / \eta_s \cdot \omega \quad (J \text{は定数})$$

この関係を(20)式に代入すると、

$$(\kappa \cdot \eta_s \cdot \omega) / J = \eta_s^2 (2\omega / (2\omega - 1)) [1 - \sqrt{1 - (2\omega - 1) / 2\omega \cdot \eta_s}]^2$$

$$\kappa = (J / \omega) \cdot \eta_s \{ (2\omega / (2\omega - 1)) [1 - \sqrt{1 - (2\omega - 1) / 2\omega \cdot \eta_s}] \}^2 \quad \dots (22)$$

よって、弁入口側のサブクール度 Δt に対する許容圧力降下係数 $\kappa (1 - \eta_c^*)$ は、
臨界圧力比 η_c と、飽和圧力比 $\eta_s = P_s / P_c$ と上式の様な関係がある事が分かる。

κ の値を数値解析によって求めた、結果を以下に示す。ただし、蒸気表より求めた物性値より $\omega = \{ (C_{f,c} \cdot T_c \cdot P_s) / V_{f,c} \} (V_{f,g,c} / h_{f,g,c})^2 = 0.4553032, 0.3800852, 0.31548, 0.394334$ を得た。これらをパラメータとして上の関係式に代入して κ と η_s 、 κ と η_c の関係を求めた。図14～17参照。

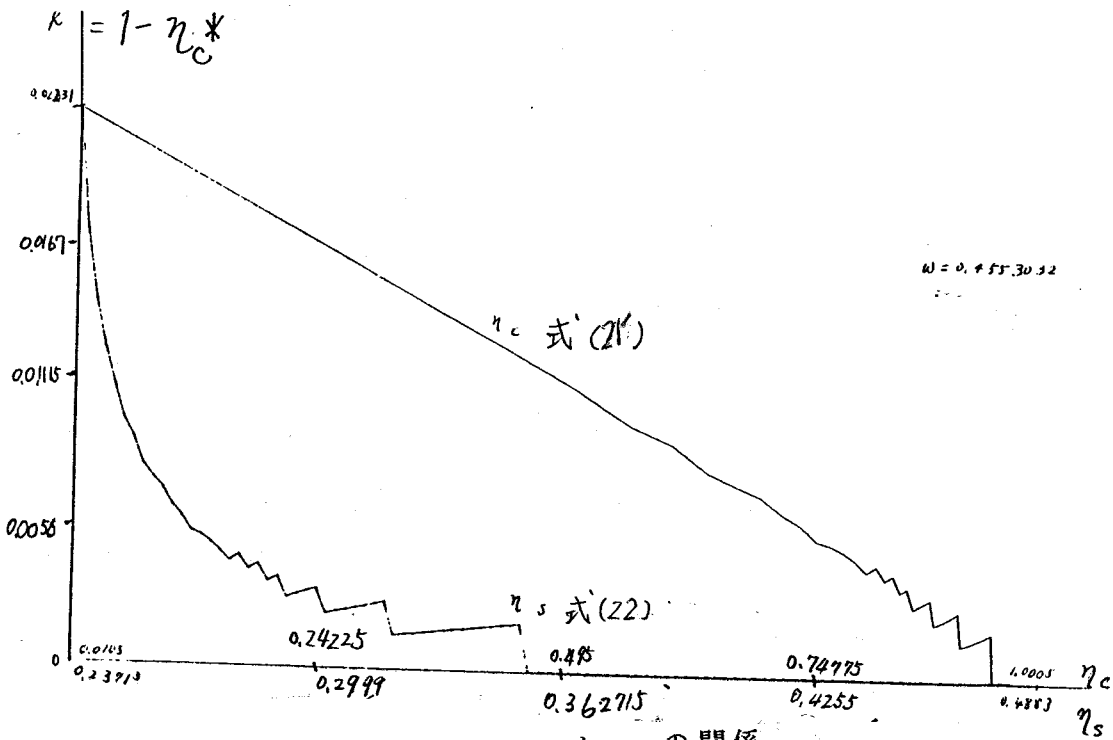


図 14 η_c^* 、 η_c と η_s の関係

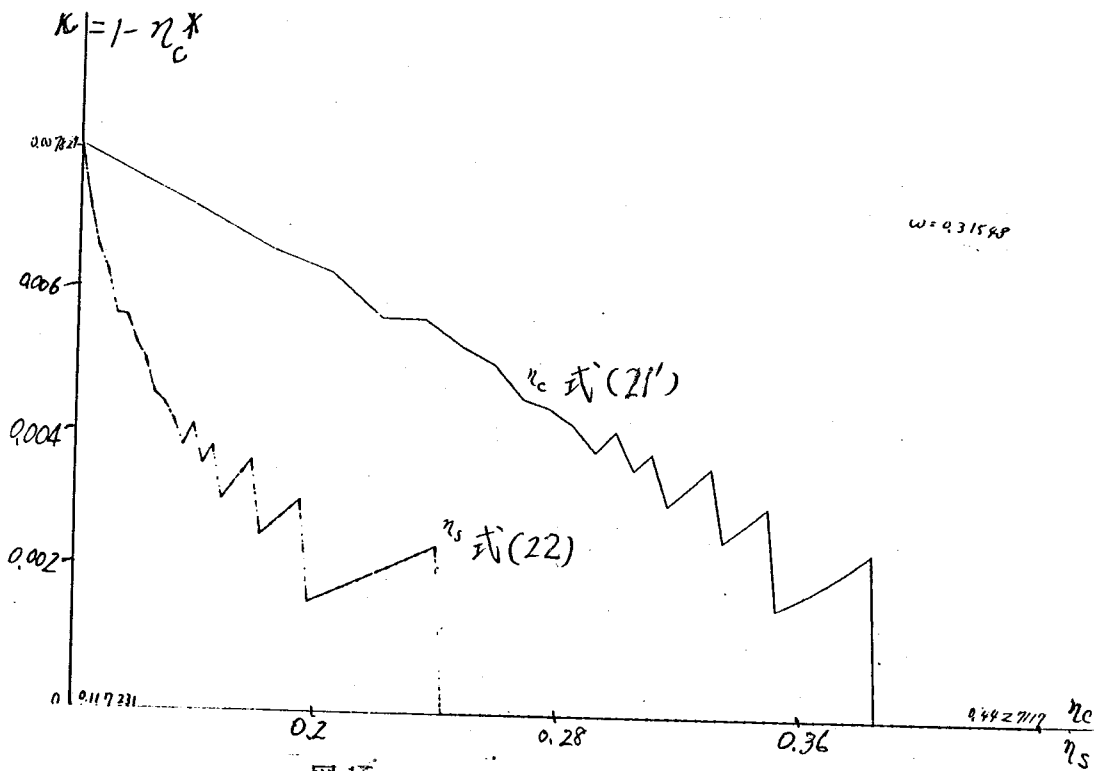


図 15 η_c^* 、 η_c と η_s の関係

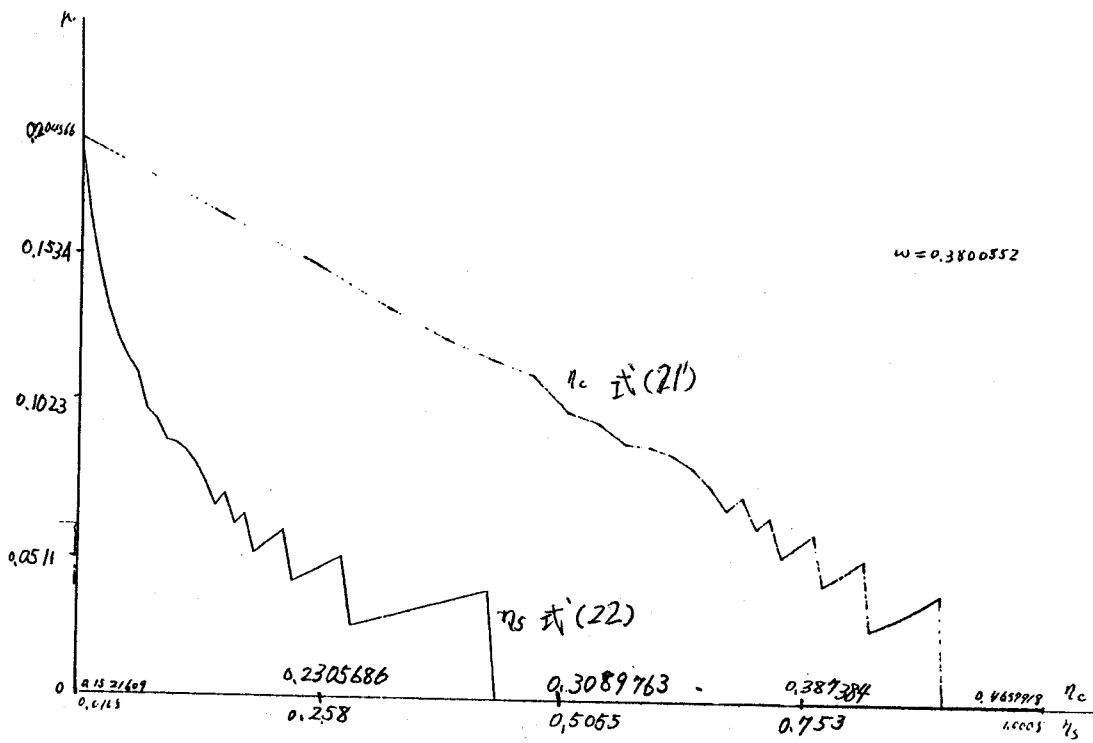


図16 η_0 、 η_e と η_s の関係

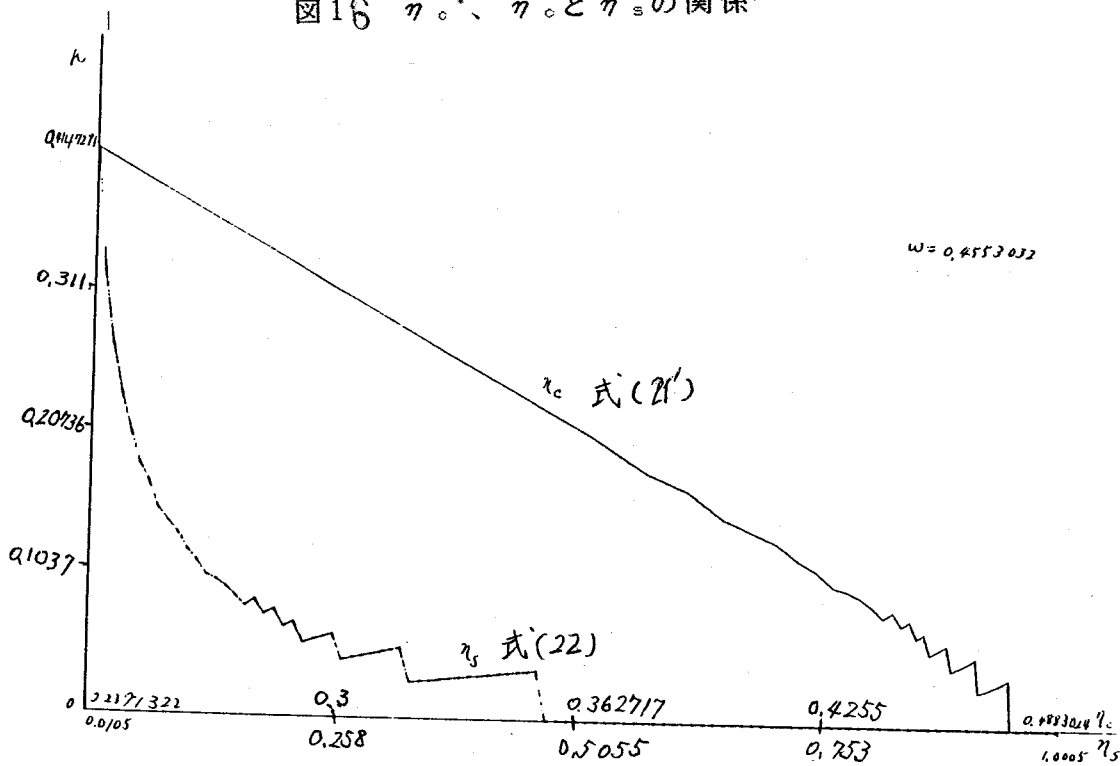


図17 η_0 、 η_e と η_s の関係

尚、 η_s と η_c の関係を、 $\omega=0.394334$ 他の場合に付いて図 18に示す。

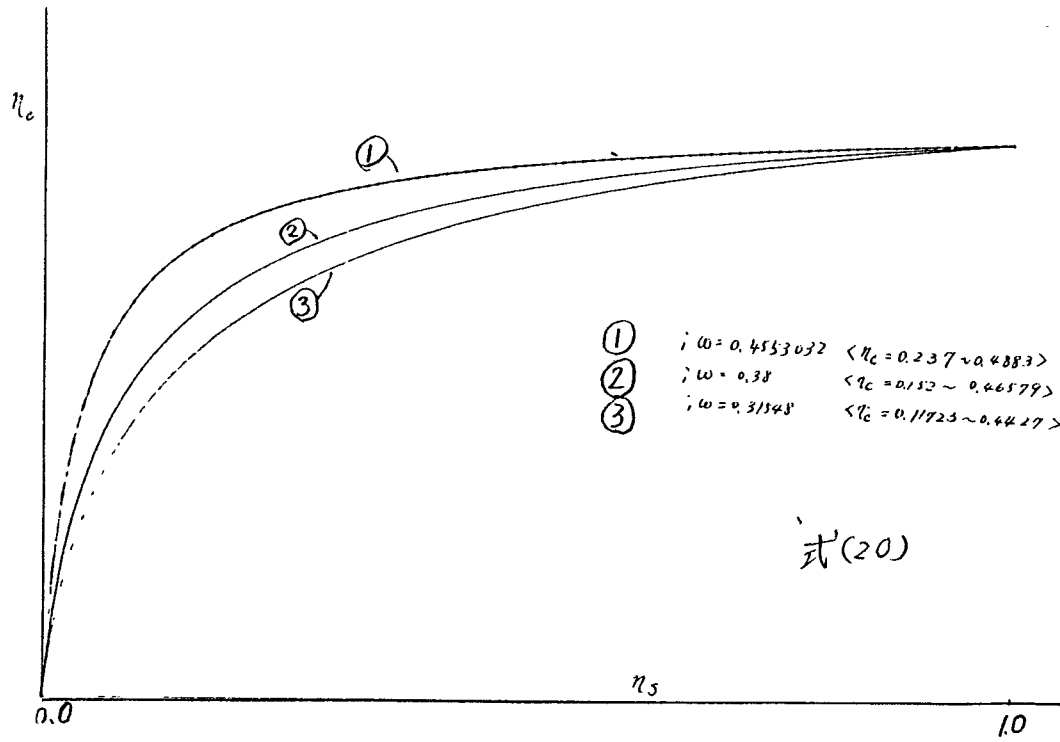


図 18 η_c と η_s の関係

また、 η_c と η_s の関係を求める為の実験データと計算値との比較を $\omega=20, 30$ に付いて行った、その結果を図19、20に示す。

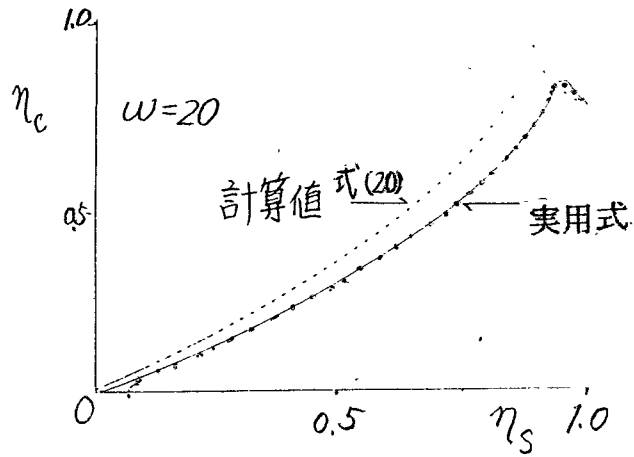


図19 η_c と η_s の関係

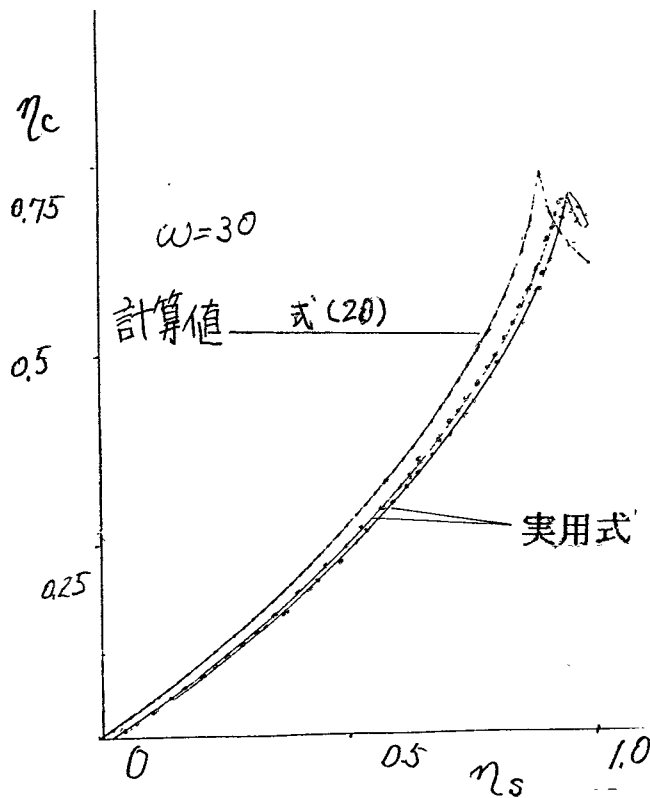


図20 η_c と η_s の関係

η_c 、 η_c^* 、 η_s 、 ω 、 Δt の実験データ

T0	306.05 K	399.6 K	405.05 K	312.65 K
P0	4.3 ata	4.912 ata	4.047 ata	4.801 ata
η_c	0.0114	0.47	0.46	0.008873
η_c^*	0.712	0.47	0.46	0.8872734
η_s	0.0119	0.504	0.72	0.015256
ω	0.25217	20.556	22.067	0.3014
Δt	2.708 °C	93.953 °C	102.802 °C	7.403 °C

6. 吹き出し係数

実験値と実用式およびモデルから求めた流量を基にして数値解析を行い、臨界時の吹き出し係数と入口クオリティーの関係を求めた。 添付書類 参照。

それらの結果を図21～29及び表3に示す。

図中のよどみ(スタグネーション)クオリティー X_0 は次式で表せる。

$$X_0 = (V_0 - V_f) / (V_a - V_f)$$

また、吹き出し係数 α は G_{calc} を臨界流量の計算値とし、 G_{meas} を臨界流量の計測値とすると、 $\alpha = G_{meas} / G_{calc}$ より求まる。ここで、 G_{calc} に実用式として G.F.Brockett & C.F.King、Burnell、IECの各式、また理論式としてHEM(均質平衡モデル)、HNEM(均質非平衡モデル)、SEM(スリップ平衡モデル)の各モデルより導出した値を用いて計算した。なを、添え字の1はエネルギー式、2は運動量式より導出された理論式を表す。

6-1 計算結果

弁リフト0.8mmで吹き出し係数の値に僅かの幅が現れるのは、試験弁上流側に蒸気泡か、気相が存在していることと、管入口部での急激な状態変化による気液間の熱的不平衡、及び弁縮流部下流での圧力分布が振動性になり、これを含んだ計測データを基にした計算値によるものと考えられる。（管路による管摩擦は考慮に入れていない。）

図21～29及び表4参照。

表3 各実用式からの P_c の推定値を用いて算出した G_c と実測値間の吹き出し係数における理論式と実用式の比較

P_c の値

IECによる P_c	0.005~0.3811
Burnellによる P_c	0.003~0.186

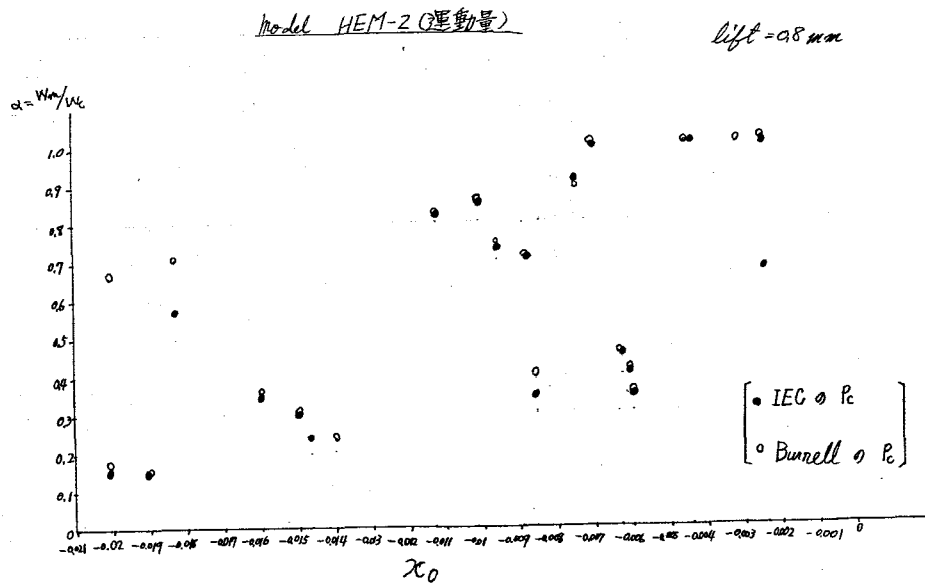
各実用式からの P_c の推定値を用いて計算した G_c による吹き出し係数

実用式

α	IECによる P_c	Burnellによる P_c
a) Burnellの式の G_c	0.85	0.85
b) IECの式の G_c	0.4	0.35
c) Brockett, Kingの式の G_c	0.35	0.3

理論式

α	IECによる P_c	Burnellによる P_c
a) HEM(エネルギー式)の G_c	1.1	1.3
a) HEM(エネルギー式)の G_c	0.7	0.3
a) HEM(運動量)の G_c	0.7	0.65
b) HNEM(エネルギー式)の G_c	0.5	0.2
b) HNEM(運動量式)の G_c	0.6	18.0
c) SE(エネルギー式)の G_c	0.4	6.0



パソコン (蒸気表の部分領域1) を用いた計算結果 図 21 クオリティーと吹き出し係数の関係

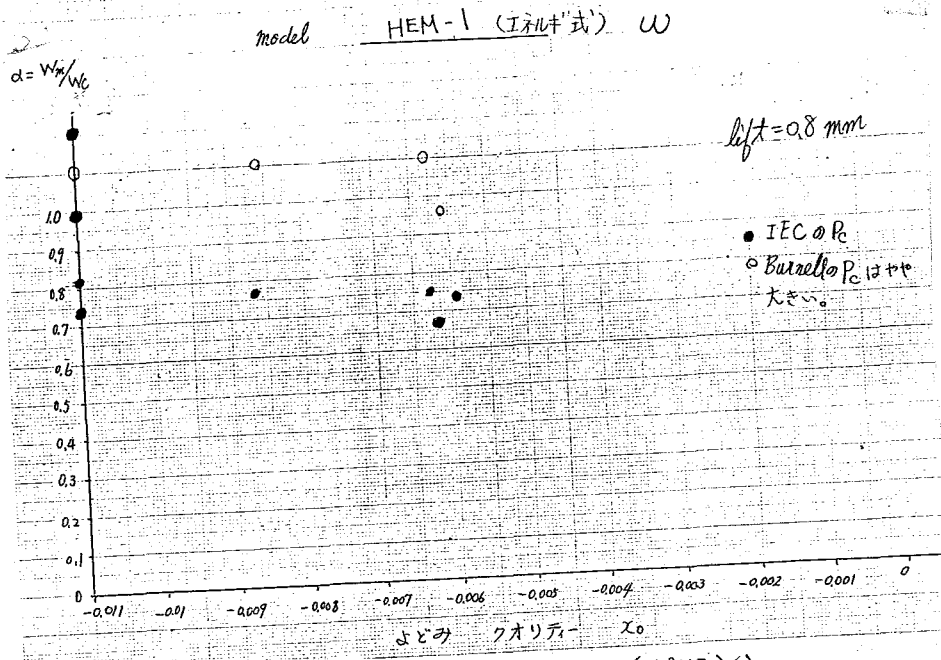


図 22 クオリティーと吹き出し係数の関係 (パソコン)

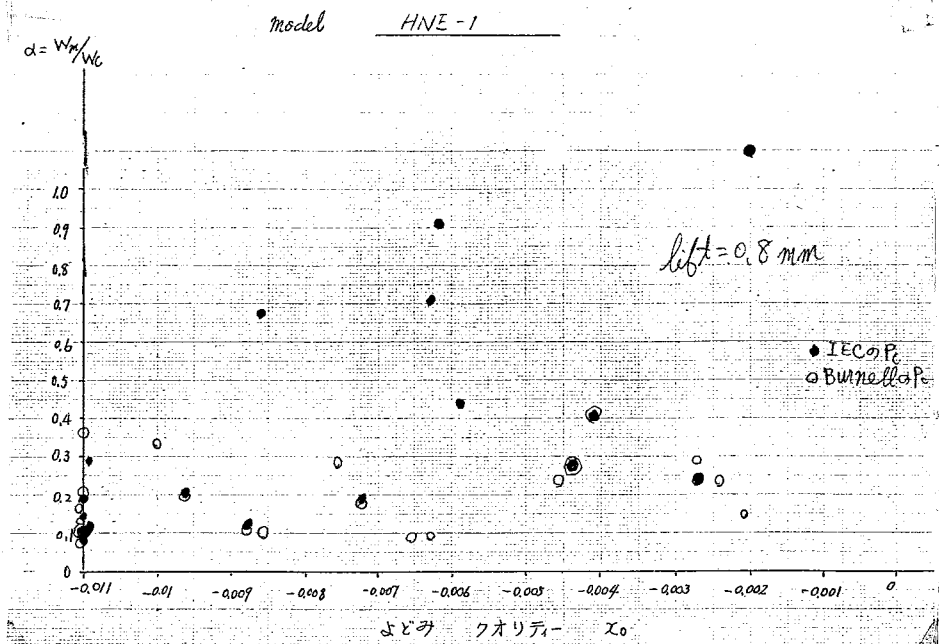


図 23 クオリティーと吹き出し係数の関係

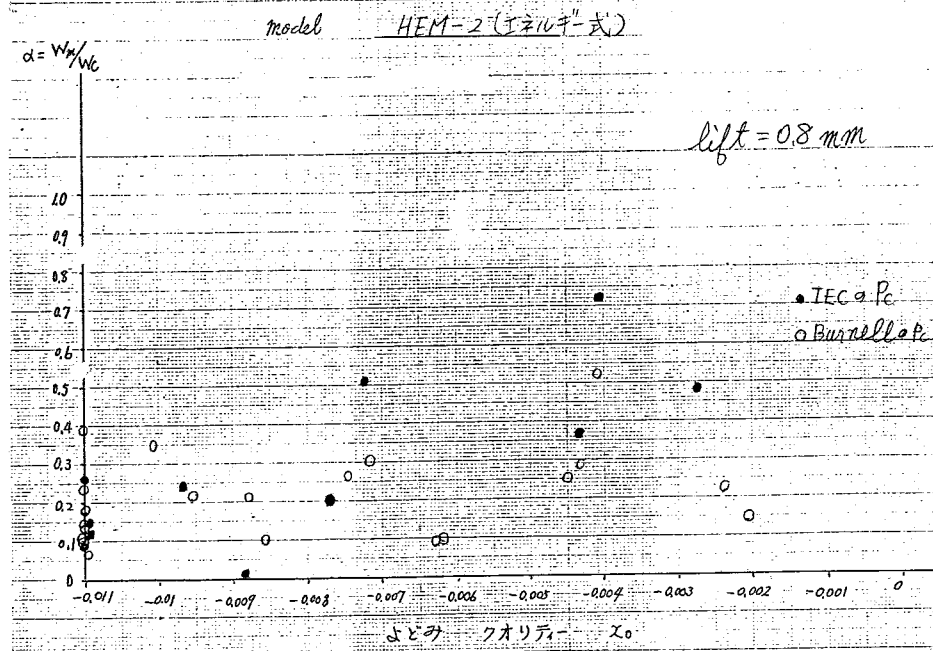


図 24 クオリティーと吹き出し係数の関係

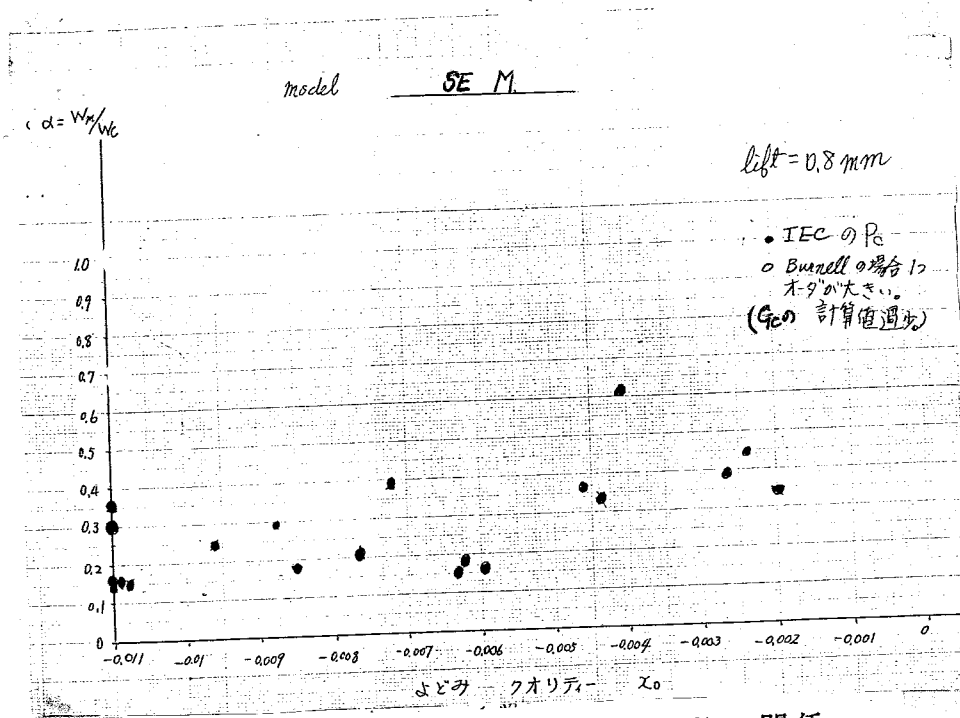


図 25 クオリティーと吹き出し係数の関係

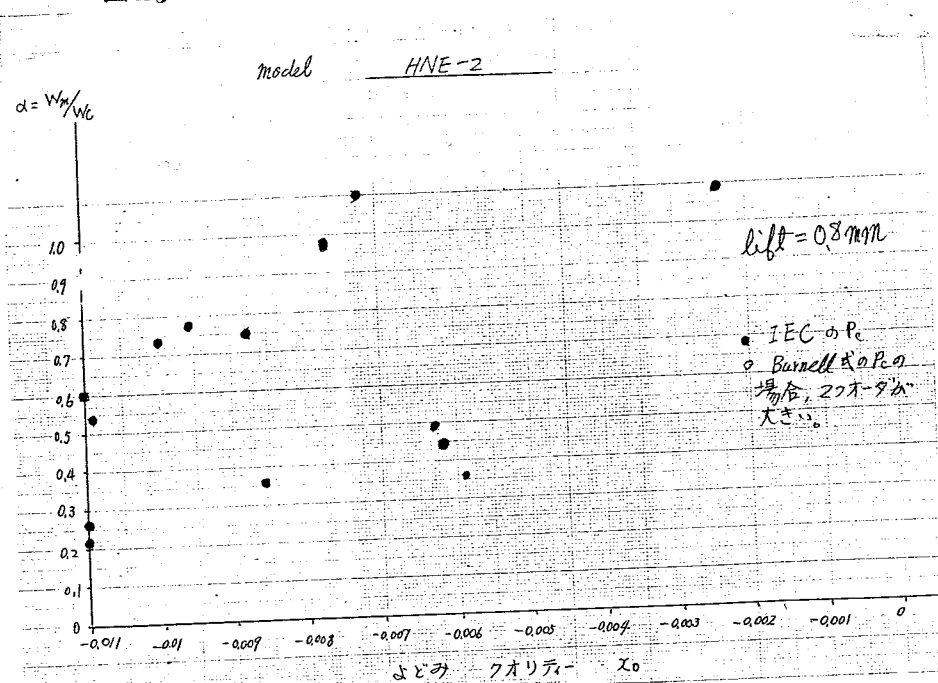


図 26 クオリティーと吹き出し係数の関係

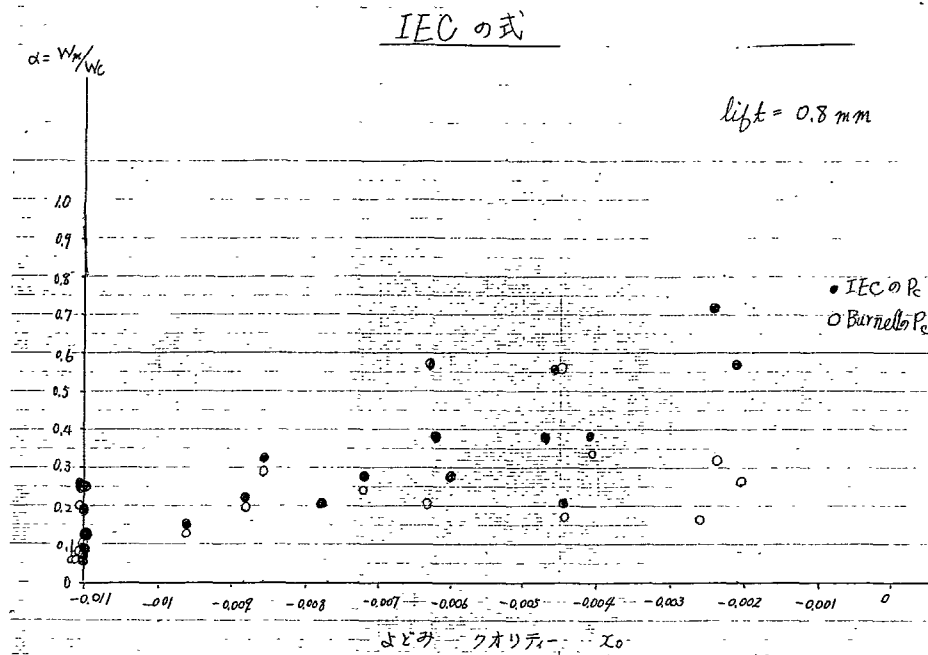


図 27 クオリティーと吹き出し係数の関係

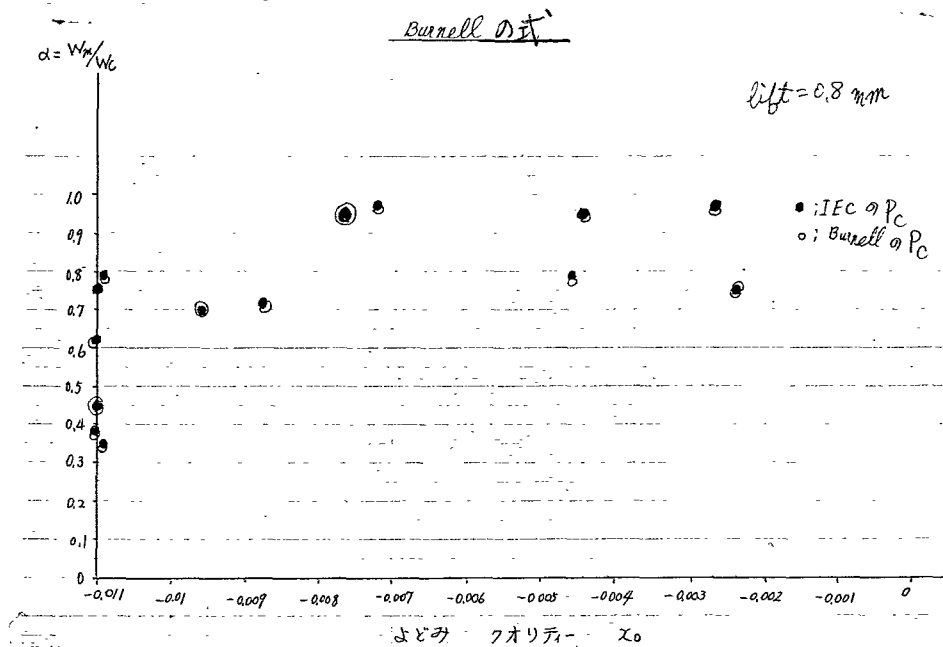


図 28 クオリティーと吹き出し係数の関係

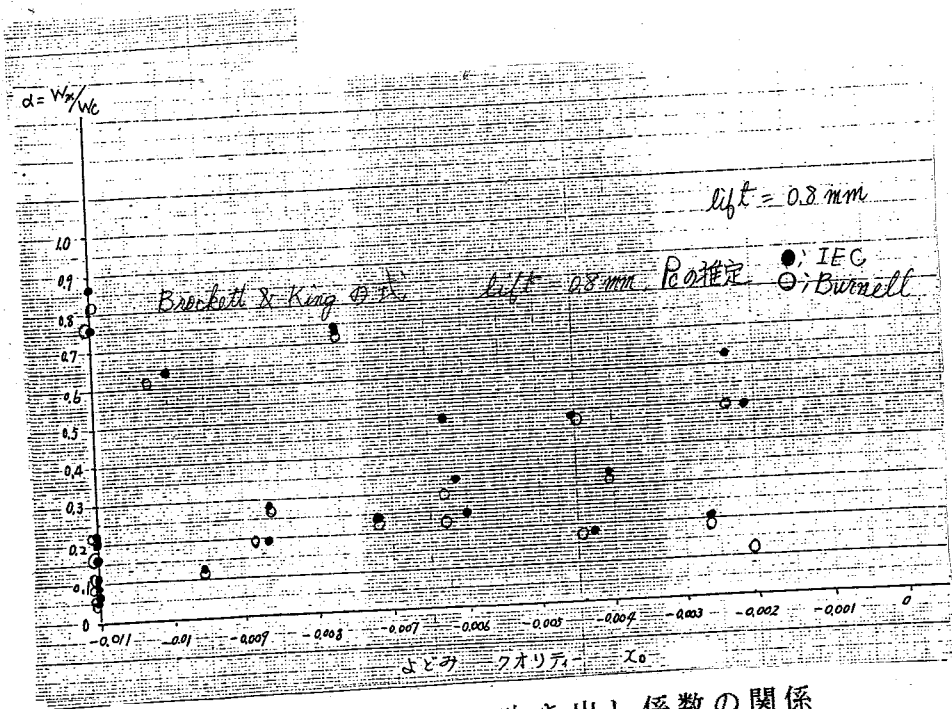


図 29 クオリティーと吹き出し係数の関係

6-2 各理論モデルから求めた臨界流量に対する標準偏差を比較すると、3～14 %以内に収まった。 添付書類参照。

7 結論

- 1) 見掛けの臨界圧力比 η_{c*} が増加すると、臨界圧力比 η_c 、飽和圧力比 η_s は共に増加する。図14～17
- 2) サブクール度 Δt が小さくなると、見掛けの臨界圧力比 η_{c*} は急激に増加する。図2、3
- 3) 臨界圧力比 η_c と飽和圧力比 η_s の関係はパラメータ ω によって整理できることが実験的に明かになった。図18～20
- 4) F.G.BrockettとC.F.Kingの実験式中の許容圧力降下係数 $\kappa=1-\eta_{c*}$ と理論モデルの見掛けの臨界圧力比 η_{c*} との関係を検討した。
- 5) 臨界圧力比 P_c の推定値は、実用式では全ての実用式の吹き出し係数は0.1～0.9になり、理論式でIECの P_c を用いると、全ての理論式で、0.1～1.0になり、Burnellの P_c を用いると、HEM,HNEM(エネルギー式から導出)で0.1～0.5になった。
- 6) HEM,HNEMの理論式による臨界流量は、サブクール度による影響が比較的表現し難い、またSEM,Burnell,Brockett & Kingの式、およびIECの定義式に比較して高い値を与える。
- 7) 各理論モデルに基づく吹き出し係数は、弁リフトが0.8mmの場合は0.1～0.9の範囲にあり一定した値を示さない。

終わりに当り、実験装置の製作、実験及びデーター整理等に御協力頂き、適当な御助言を頂いた久保教授始め、蒸気原動機工学講座の皆様に対して深甚なる謝意を表します。

8 添付書類

- 7) η_o VS η_s (ω パラメーター) の関係を求める為のソース・プログラム、入出力データー。 P.1
- イ) κ VS η_o の関係を求める為のソース・プログラム、入出力データー。 P.1
- ウ) G VS P_o (サブ・プログラム; 第一種ベッセル関数) の関係を求める為のソース・プログラム、入出力データー。 P.111
- エ) κ VS η_s (文関数; $\omega(P_s, T_o)$) の関係を求める為のソース・プログラム、入出力データー。 P.5
- オ) $B_{(p,1)}$ VS P_i (サブ・プログラム; Γ 関数) の関係を求める為のソース・プログラム、入出力データー。 P.3
- キ) HEM, HNE Model, SE Model, Burnell Model, Dancer の近似モデルに於ける臨界流量と容量係数を求める為のソース・プログラム、入出力データー。
P.42, P.76, P.93
- ク) JSME 蒸気表に於ける、部分領域 [I] の物性値を求める為のソース・プログラム、入出力データー。 P.11, P.24, P.59, P.71
- ケ) JSME 蒸気表に於ける、部分領域 [II] の物性値を求める為のソース・プログラム、入出力データー。 P.48, P.71
- コ) 各モデル内での臨界流量の計測値からの標準偏差を求める為のソース・プログラム、入出力データー。 P.69

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付録

I 弁における臨界流量の実用式

ボイラー及び圧力容器構造規格の付録 2 高温液体用逃がし弁、または安全弁の大きさに付いての解説に見られる様に、G.F.BrockettとC.F.Kingの臨界流量の実験式が用いられているが、この式は実際の場合と良く一致している。

次に、Burnellは流れを等エントロピー流れとし、臨界区画までは蒸発しない、つまり、弁の上流側では液のままであると、仮定した非平衡均質モデルから実用式を表した。縮流部までは液単相流が存在するので、臨界流量を決定する為に、ベルヌーイ式を用いる。臨界圧力は表面張力の関数になるので、次の式で表される。

$$G_c = \sqrt{2 \cdot \rho_l \cdot g_c [P_0 - (1-c)P_{sat}(T_0)]}, \quad c = 0.294 \cdot \sigma(T_0) / \sigma(P_{sat} = 175 \text{ psia})$$

Henry-Fauske Model と Burnellの式では、上流側が液の時、チョーキング面積と縮流部面積の不一致と摩擦損失項による吹き出し係数が一定になる。この場合の仮定として、単相流体に対する吹き出し係数を、チョーク面での二相状態に適用したことである。HEMとSEMは流路形状に対して、非平衡の度合を決定している因子であるクオリティーの関数として表される。

弁内では等エントロピー流れであると仮定すると、フラッシング点での最高可能圧力は、弁入口温度に対する飽和圧力 $P_{sat}(T_0)$ になる。

弁背圧 $P_c > P_{sat}(T_0)$ の時、フラッシングが起こり得る、この時単相方程式が適用される。(PORV Test では 容量係数を0.59と定めている。)

又、実用式としてIECの臨界流量の式が用いられる。

実用式の内容を表2に示す。

I -1 Burnellの式

a)は、等エントロピ流れを仮定し、弁縮流部までは蒸発せず、液単相が存在するとしてベルヌーイ式を用いた非平衡モデルに属している。

臨界圧力 P_c が表面張力 σ の関数になること[式(1')]]を用いて G_c を求める。[式(1)]

C は実験的に決定した定数である。

I -2 Brockett & King の式

b)は、連続の式とエネルギー式から臨界流量 G_c を求め、これに流体のサブクール度による影響を表す係数 κ を実験的に決定する。

見掛けの臨界圧力比 η_* は式(2')で表され、係数 κ とは $\kappa=1-\eta_*$ なる関係がある。

I -3 IECの式

c)は、連続の式と運動量式から臨界流量 G_c を求め、これに流路形状、熱力学的因子、摩擦等力学的因子による影響を各種係数として実験的に決定し、流量算定に用いる。

各種弁に対する圧力回復係数 $F_L(=P_2/P_1)$ の実験値を次に示す。

F_L (圧力回復係数) の実験値 (弁全開時)

Valve Type	Flow Direction	Trim Type	F_L
Single port or Double port Globe	Either	Ported plug	0.85-0.95
Double port Globe	Either	Contoured plug	0.85-0.90
Single port Globe	Flow-to-open	Contoured plug	0.85-0.90
Single port Globe	Flow-to-close	Contoured plug	0.75-0.85
Angle	Flow-to-open	Contoured plug	0.85-0.90
Angle	Flow-to-close	Venturi	0.45-0.55
Ball		Characterized	0.60-0.65
Ball		Regular port	0.55-0.60
Butterfly		60 Degree	0.55-0.65

II 理論臨界流量式

二相流に対する質量流束のT-S線図上の説明として、図30と図31を参照されたい。

T-S線図上のよどみ状態1A(温度 T_{01} , 圧力 P_{01} の飽和液)から、順次、低圧側 $2A \rightarrow 3A \rightarrow 4A$ に対応する点の圧力に等エントロピー膨張する。

この時の質量流束に付いては、図30、図31において、3A, 3Bの点は、臨界質量流束と呼ばれ、この時の圧力を臨界圧力と呼ぶ。

図31中の破線は、図30中の1A, 1B, 1Cの各点の様な飽和液から、膨張を開始する時の臨界質量流束 G_{f2} である。

図30中の1D, 1E等の各点の様な飽和蒸気から、膨張を開始する時も G_f 線と相似の G_v 線が得られる。

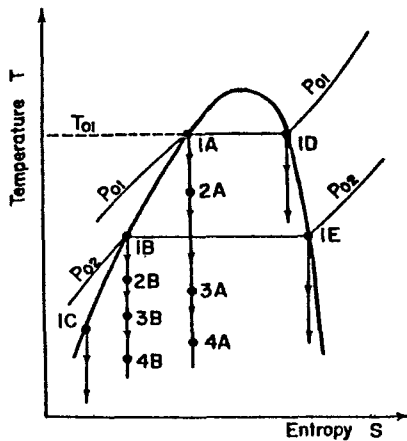


図 30 T-S線図

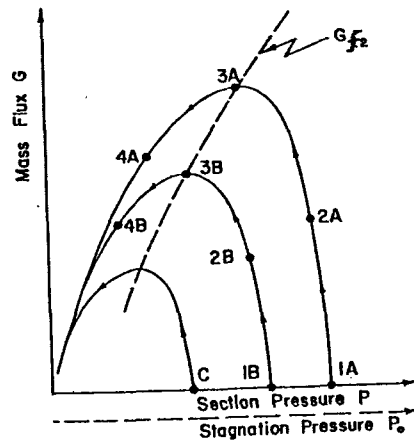


図 31 代表的質量流束線図
(等エントロピー均質流)

二相臨界流理論式

二相臨界流量 G_c を、次式で表す事ができるものとする。

$$G_c = \sqrt{\frac{g_c}{\left(-\frac{dv}{dP}\right)_S}}$$

均質二相流に対する V は、

$$V = V_f + X \cdot (V_g - V_f)$$

$$\therefore G_c = \sqrt{\frac{-g_c}{\left\{X \cdot \frac{dv_g}{dP} + (1-X) \cdot \frac{dv_f}{dP} + (v_g - v_f) \cdot \frac{dX}{dP}\right\}_S}}$$

空気-水系(二成分二相流)では、 $dX/dP=0.0$ なので、

$$G_c = \sqrt{\frac{-g_c}{\left\{X \cdot \frac{dv_g}{dP} + (1-X) \cdot \frac{dv_f}{dP}\right\}_S}}$$

各相が等エントロピー変化する場合の第一近似として、

$$\left\{X \cdot \frac{dv_g}{dP} + (1-X) \cdot \frac{dv_f}{dP}\right\}_S \doteq X \cdot \left(\frac{dv_g}{dP}\right)_S + (1-X) \cdot \left(\frac{dv_f}{dP}\right)_S$$

飽和蒸気-飽和水二相流(一成分二相流)では、圧力低下による蒸発、あるいは凝縮現象を伴い、乾き度が変化する。

この時、両相が熱力学的平衡状態にあるとした場合の臨界流量、あるいは臨界状態の値について、均質流モデルにより求めてみる。(M.A.Grolmes, J.C.Leung)

6-1 均質平衡モデル (HEM)

気液二相流を気液間にスリップの無い均一に混合した均質流体であると仮定すると、SI単位系では、

$$G_c = \sqrt{\frac{1}{\left(-\frac{dv}{dP}\right)_S}}$$

(添え字sはエントロピー)

又はエネルギー式より、

$$\frac{1}{2}(Gv)^2 = -\int_{P_0}^{P_3} v_{f0} \cdot dP - \int_{P_3}^P v \cdot dP$$

ここで、 v は均質流体と仮定した場合の二相流の平均比容積であり、

$$V = V_f + X \cdot V_{fg}$$

で表す事ができる。

G_0 の値は弁縮流部における二相流体の局所状態値である。

このモデルでは、等エントロピー変化と気液間は熱平衡に達していると仮定される。(Benjamin 1942, Isbin, Starkman)

$$a) G = \frac{\sqrt{2(h_0 - h_1)}}{v_1} \quad \text{より、} \quad G = \frac{1}{v_1} \cdot \left\{ 2 \int_{P_0}^{P_1} v \cdot dP \right\}^{\frac{1}{2}} \quad \left(\begin{array}{l} \text{エネルギー式より} \\ d h = A \cdot v \cdot dP \end{array} \right)$$

$$G_c = \sqrt{\left(\frac{v_0}{P_0} \right) \cdot \left(\frac{2\gamma}{\gamma-1} \right) \cdot \left(1 - \eta_c^{\frac{\gamma-1}{\gamma}} \right) \cdot \eta_c^{\frac{2}{\gamma}}}$$

$$b) G = \left[- \frac{dv}{dP} \right]^{-\frac{1}{2}} \quad \left(\text{運動量式より } v \cdot dP + G^2 (v \cdot dv) = 0 \right)$$

$$G_c = \sqrt{\left(\frac{v_0}{P_0} \right) \cdot \gamma \cdot \eta_c^{\frac{\gamma+1}{\gamma}}}$$

但し、 γ :比熱比、 A :熱の仕事当量。

又は,

$$3). G_c = \frac{A}{x \left(\frac{v_g}{v_f} \right) + (1-x)} \cdot \sqrt{\left(\frac{P_0 \cdot g_c}{v_f} \right) \left\{ \frac{2 \cdot C \cdot T_0}{P_0 \cdot v_f} \left[\left(1 + \frac{x_0 \cdot h_{fg0}}{C \cdot T_0} \right) \left(1 - \frac{T}{T_0} \right) + \frac{T}{T_0} \ln \left(\frac{T}{T_0} \right) + 2(1 - \eta_c) \right] \right\}}$$

$$1). G_c = \sqrt{\frac{P_0}{v_f} \left\{ \frac{x \left(\frac{v_g}{v_f} \right)}{\eta_c \frac{1}{1+1}} + w \left(1 - \frac{x \cdot h_{fg}}{C \cdot T} \right) \right\}^{-1/2}}$$

$$3). G_c = \eta_c \cdot \sqrt{\frac{P_0 \cdot \rho_{f0} \cdot g_c}{w \cdot \eta_s}}$$

但し,

w : Correlation parameter

ρ : 容器内液体密度

$$\eta_s = \rho_s / \rho_0$$

g_c : 重力の加速度

6-2 均質非平衡モデル (HNE Model)

熱平衡クオリティー X_e を実験的に定め、熱非平衡の程度を表すパラメーターを X_e の関数として与え、気液等速の仮定より G_c を求める。(Henry)

よどみクオリティー X_0 が一定に保たれると仮定した、凍結流モデル。

管入口と管出口の圧力差は、管摩擦を無視し、

$$P_0 - P_c = G_c^2 \left\{ \frac{U_{f0}}{2C^2} + X_c (U_{gc} - U_{fc}) \right\}$$

ここで、 α を管入口の損失を表す流量係数比、入口形状が鋭角の場合では0.61、滑らかな場合は1とする。

次に、臨界点におけるクオリティー変化を、 $(dX/dP)_c = N \cdot (dX_e/dP)_c$ とする。

ここに、

X_e ; 熱平衡を仮定した時の平衡クオリティー。

N ; 熱非平衡の程度を表すパラメーターで X_e の関数として次の様に与える。

$$N = 20 \cdot X_e \quad (X_e < 0.05)$$

$$N = 1.0 \quad (X_e > 0.05)$$

これらの仮定、及び気液等速の仮定から、

$$G_c = \sqrt{\left\{ \frac{1}{\frac{v_g \cdot X_e}{P} - (v_g - v_{f0}) \cdot N \cdot \frac{dX_e}{dP}} \right\}_c}$$

この他、臨界クオリティーは熱非平衡が指数関数的に減衰するとして、

$$X_c = X_{LT} \cdot \left\{ 1 - e^{-B(L/D - 1/2)} \right\}$$

$$X_{LT} = N \cdot X_e$$

$$B = 0.0523$$

$L/D < 12.0$ では、管入口での流れの剥離のため、圧力が一定になり、相変化は生じない。

これらの理論は、管入口から出口に至るまでの、気液間の非平衡を厳密に考慮したものではなく、大胆な仮定あるいは経験式を含む為、その理論の適用、及び精度には自ずから限りがある。

$$7) \quad v_{fg} = v_g - v_f$$

$$h_{fg} = h_g - h_f$$

$$\text{Clopeyron式は, } dT/dp = T \cdot \left(\frac{v_{fg}}{h_{fg}} \right)$$

$$G_c = A^{-1} \sqrt{\frac{P_0}{v_f}} \left[2 \cdot (1 - \eta_c) + 2 \cdot B \cdot \left\{ \left(1 + \frac{x_0 \cdot h_{fg0}}{C \cdot T_0} \right) (1 - \zeta_c) + \zeta_c \cdot \ln \zeta_c \right\} \right]^{1/2}$$

ここで、

$$A = x \cdot R + (1 - x)$$

$$B = \frac{C \cdot T_0}{P_0 \cdot v_f}$$

$$R = \frac{v_g}{v_f}$$

$$\zeta_c = \frac{T}{T_0}$$

$$1) \quad G_c = \sqrt{\frac{P_0}{v_f}} \cdot \left\{ \frac{x \cdot R}{1 - \eta_c} + \psi \left(1 - \frac{x \cdot h_{fg}}{C \cdot T} \right) \right\}^{-1/2}$$

$$\psi = \frac{C \cdot T \cdot P_0}{v_f} \cdot \left(\frac{v_{fg}}{h_{fg}} \right)^2 \quad ; \text{Flow Parameter (w)}$$

又は、

$$3) G_c = A \cdot \sqrt{\left(\frac{P_0 \cdot g_c}{v_f}\right) \left\{ \frac{2(1-\eta_c) + 2\chi_0 \left[\frac{\eta \cdot v_{g0}}{v_{f0}} - \eta_c \frac{\eta-1}{\eta} \right] - (1-\eta_c)}{1 + \chi_0 \left(\frac{v_{g0} \cdot \eta_c^{-\frac{1}{\eta}}}{v_{f0}} - 1 \right)} \right\}}$$

$$1) G_c = A \cdot \sqrt{\left(\frac{P_0 \cdot g_c}{v_{f hne}}\right) \left\{ \frac{\chi_0 \cdot \frac{v_g}{v_{f hne}}}{(1-\chi_0) \cdot \frac{c}{c_g} \cdot \eta_c} + N \cdot \omega \cdot \left(1 - \frac{\chi \cdot h_{fg}}{c \cdot T} \right) \right\}}$$

SI単位系では、

$$3) G_c = \sqrt{\left(\frac{P_0}{v_f}\right) \left\{ \frac{2(1-\eta_c) + 2\chi_0 \left[\frac{\eta \cdot v_{g0}}{v_{f0}} - \eta_c \frac{\eta-1}{\eta} \right] - (1-\eta_c)}{1 + \chi_0 \left(\frac{v_{g0}}{v_{f0}} \cdot \eta_c^{-\frac{1}{\eta}} - 1 \right)} \right\}}$$

$$1) G_c = \sqrt{\left(\frac{P_0}{v_{f hne}}\right) \left\{ \frac{\chi_0 \cdot \frac{v_g}{v_{f hne}}}{(1-\chi_0) \cdot \frac{c}{c_g} \cdot \eta_c} + N \cdot \omega \cdot \left(1 - \frac{\chi \cdot h_{fg}}{c \cdot T} \right) \right\}}$$

右辺第一項は流体の蒸気密度の圧縮性効果(高乾き度)、第二項はフラッシュの圧縮性効果(低乾き度)をそれぞれ表す。式(1)

6-3 スリップ 平衡 モデル (SEM)

臨界点におけるスリップ比を $S=(V_g/V_f)^{1/3}$ と仮定すると、流量は圧力のみの関数となり、与えられた条件の元で流量を求め、臨界流量を臨界点における圧力とクオリティーを用いて計算する。

流量は、与えられた入口状態に対し、極大値をとると言う条件より、

$$(\partial G/\partial S)_0=0.0, (\partial G/\partial P)_0=0.0$$

従って、臨界点におけるスリップ比 S は、

$$S=(V_g/V_f)^{1/3}$$

上式により、 G は圧力のみの関数となり、与えられた入口条件に対する臨界流量が計算される。

$$G_c = A \cdot \sqrt{\frac{P_0 \cdot f_c}{v_f}} \cdot \frac{\left\{ 2(1-\eta_c) + 2\left(\frac{C \cdot T_0}{P_0 \cdot v_f}\right) \left[\left(1 + \frac{x_0 \cdot h_{fg0}}{C \cdot T_0}\right) \left(1 - \frac{T}{T_0}\right) + \frac{T}{T_0} \ln\left(\frac{T}{T_0}\right) \right] \right\}^{1/2}}{\left\{ x \cdot \left(\frac{v_g}{v_f}\right) + (1-x) \cdot S \right\} \left\{ x + \frac{1-x}{S^2} \right\}^{1/2}} \quad \text{式(2)}$$

この他、Fauskeは運動量式のみを用い、臨界条件として、 $dG/dP=0.0$ のほか、臨界点において、圧力勾配が最大になると言う条件を用い、 S, G_c を次式で表した。

$$S=(V_g/V_f)^{1/2}$$

$$G_c = \sqrt{\frac{-1}{\left(\frac{dv_m}{dp}\right)}}$$

$$\text{ただし、} V_m = (1/S) \{ (1-X)S \cdot V_f + X \cdot V_g \} \cdot \{ 1 + X(S-1) \}$$

更に、熱平衡と等エンタルピー変化を仮定する事により、臨界点における圧力とクオリティーに対する臨界流量が計算される。

式(2)もSI単位系で表わすと、

$$G_c = \sqrt{\frac{P_0}{v_f}} \cdot \frac{\left\{ 2(1-\eta_c) + 2\left(\frac{C \cdot T_0}{P_0 \cdot v_f}\right) \left[\left(1 + \frac{x_0 \cdot h_{fg0}}{C \cdot T_0}\right) \left(1 - \frac{T}{T_0}\right) + \frac{T}{T_0} \ln\left(\frac{T}{T_0}\right) \right] \right\}^{1/2}}{\left\{ x \cdot \left(\frac{v_g}{v_f}\right) + (1-x) \cdot S \right\} \left\{ x + \frac{1-x}{S^2} \right\}^{1/2}}$$

次に、Levyは気液の運動量交換から S を求め、等エントロピー変化の仮定より、 G_0 を求めた。

以上の方法は、運動量式とエネルギー式を連立させて解く煩雑さを避ける為に、二相流全体として等エントロピー又は、等エンタルピー変化を仮定し、スリップ比を与える為の仮定など必ずしも、現象に忠実でない。

表3に理論式の分類を示す。

HEMは、気液間にスリップの無い均一に混合した均質流体で、気液間は熱平衡に達し、等エントロピー変化を行うと仮定している。

このモデルには、連続の式(4)とエネルギー式(5)から導出するもの γ) [式(6)]と、連続の式と運動量式(7)から導出するもの ι) [式(8)]とが有る。

HNEMは、熱平衡クオリティ X_0 を実験的に定め、熱非平衡の程度を表すパラメータを X_0 の関数として与え、かつ気液等速を仮定する。

このモデルにも γ)と ι)が有り、 γ)では均質凍結ベルヌーイ式とチョーキング状態からの非平衡を(9)式の様に表している。 ι)では、非平衡を表す係数 N を実験的に求め表3の様に決定する。

SEMは、臨界点におけるスリップ比を $S=(V_g/V_f)^{1/3}$ と仮定すると、流量は圧力のみの関数になるので、圧力とクオリティを用いて臨界流量 G_0 を求める。このモデルには γ)が有り、表3の様に計算する。

Ⅲ 熱電対温度計の検定例

図32~37に熱電対の検定例を示す。

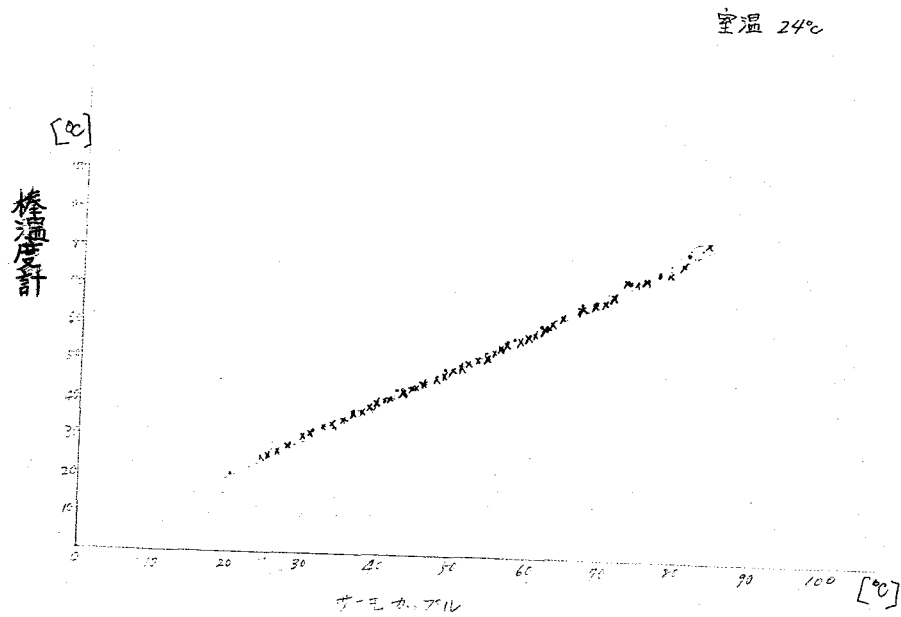


図32 熱電対温度計の補償例

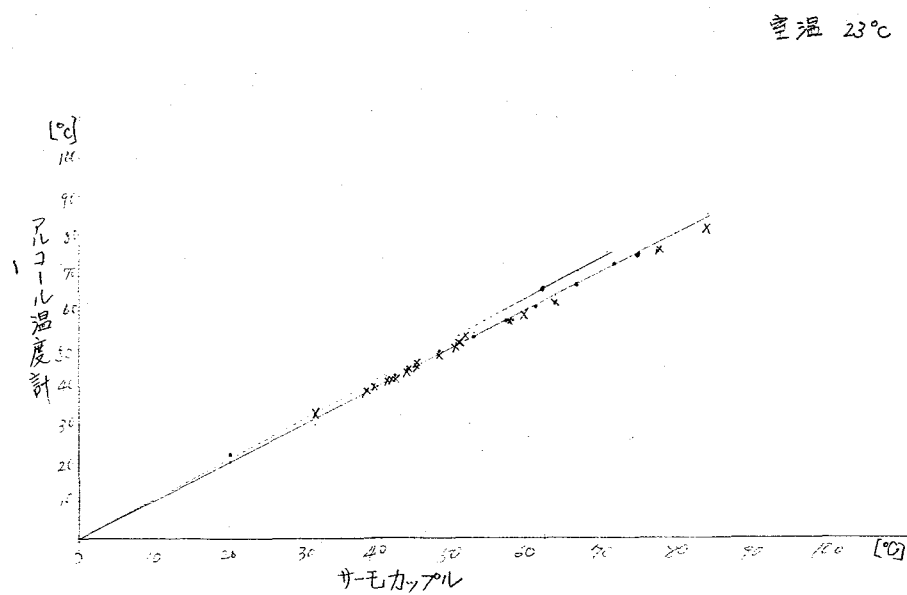


図33 熱電対温度計の補償例

室温: 24.3[°C]

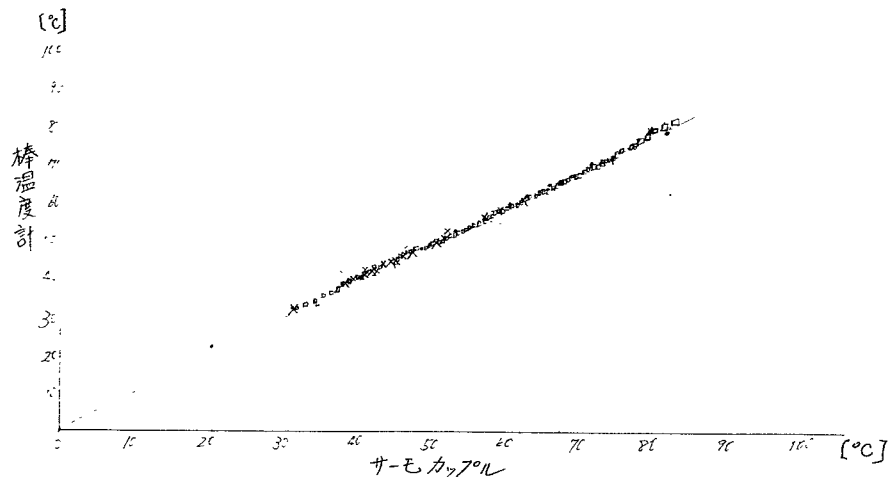


図 34 熱電対温度計の補償例

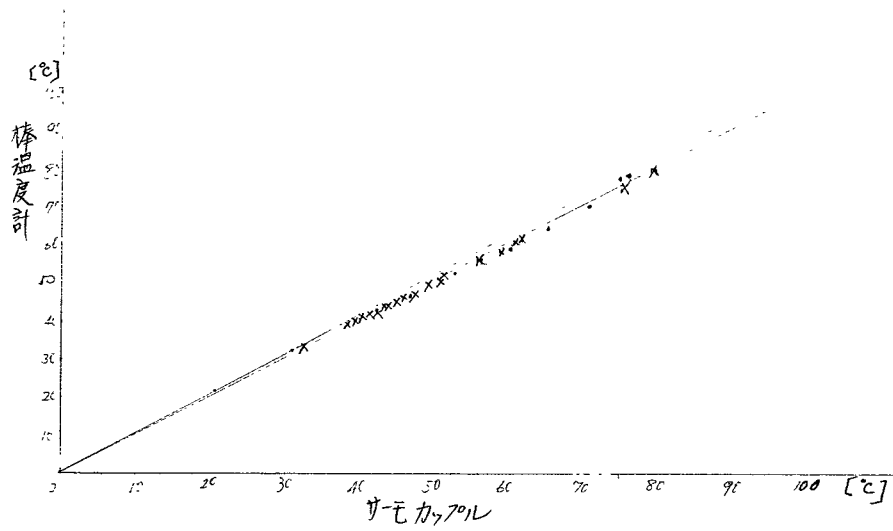


図 35 熱電対温度計の補償例

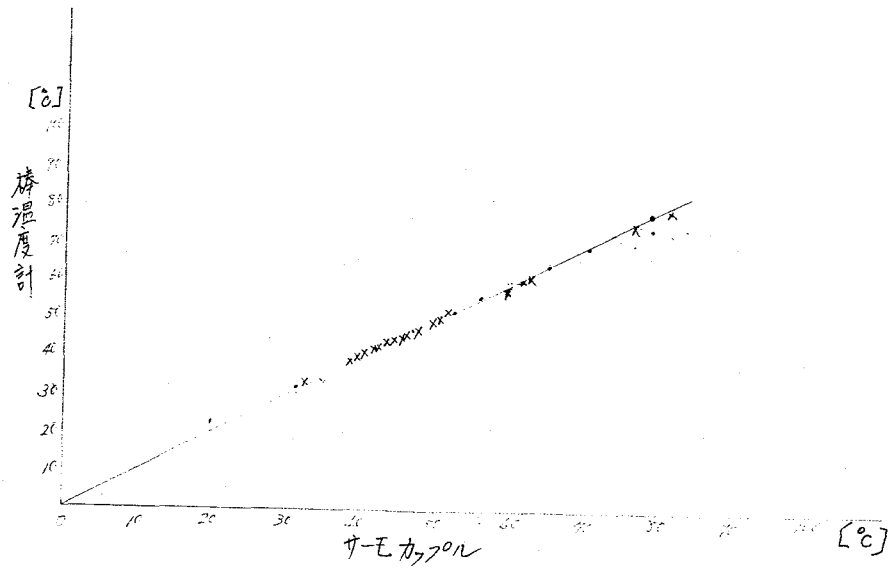


図 36 熱電対温度計の補償例

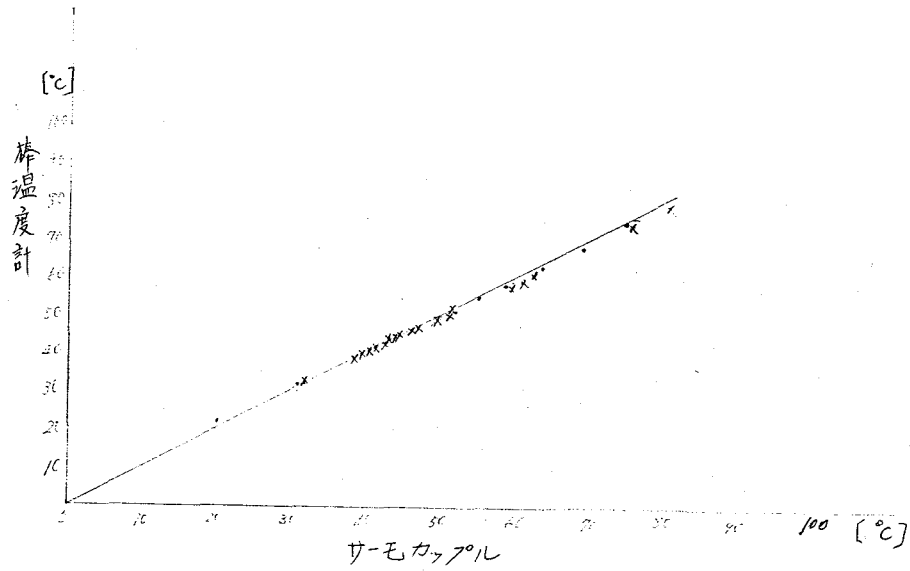


図 37 熱電対温度計の補償例

IV 実験データ

P0	P1	P2	T0	T1	Gm	Vo	B> TYPE DAT303.FOR	VVf	VVg	Vfgo	Cfo	Vfg	Hfgo
42990.	30090.	512.8	306.05	305.75	2600.	.0010051	.00108591	.43984	.43897	.998	.998	28.717395	508.049
34490.	14590.	3660.1	346.45	344.72	2020.	.0010246	.0010796	.541058	.547342	1.0013	1.0013	4.73624	514.09497
44180.	18280.	2226.86	334.65	334.55	1540.	.0010178	.00108681	.430431	.4293442	1.00014	1.00014	7.456867	507.428
46980.	11980.	13062.5	381.15	381.05	1360.	.0010489	.00108859	.4128	.4101914	1.0088	1.0088	1.4534029	506.217
49188.	13288.	24783.5	399.65	379.85	530.	.0010666	.00109117	.388963	.4929498	1.0166	1.0166	.7900866	503.899
49487.	18487.	41332.4	417.25	388.15	750.	.0010844	.0010924	.3852975	.38054	1.02546	1.02546	.4929498	503.899
49406.	11406.	2216.93	335.05	335.	830.	.001018	.0010915	.3860306	.38054	1.00019	1.00019	7.456867	503.899
49707.	12507.	6522.52	360.75	360.65	715.	.0010352	.0010917	.3838313	.38054	1.00276	1.00276	2.6806913	503.899
48505.5	11405.5	12707.72	389.05	373.65	685.	.0010569	.0010907	.3924265	.3954987	1.01236	1.01236	1.4534029	505.042
48010.	11510.	732.45	312.65	312.15	1326.	.0010076	.00109032	.396589	.3954987	.998	.998	1.8087081	505.042
47911.6	12711.6	5404.34	355.95	355.85	945.	.000309	.00109032	.396589	.3954987	1.002	1.002	1.8087081	505.042
51605.	12505.	14030.8	381.95	376.75	711.	.0010507	.0010733	.3788628	.3700462	1.01008	1.01008	1.8087081	503.899
49110.2	13710.2	25239.5	400.25	379.75	591.	.0010671	.00109117	.388963	.3880193	1.017168	1.017168	1.8462686	503.899
40300.	11300.	1415.86	325.55	325.45	2635.	.0010132	.0010834	.4675447	.4697019	.9925	.9925	10.891287	509.958
32450.	30150.	5404.34	355.95	355.85	1610.	.0010311	.0010754	.5730881	.579448	1.00256	1.00256	3.2989802	517.955
28650.	26350.	9968.8	372.35	372.25	1425.	.0010429	.0010712	.6440029	.6356043	1.00676	1.00676	1.8087081	517.955
51800.	15300.	14560.6	383.05	380.65	1600.	.0010516	.0010935	.3691706	.38054	1.00997	1.00997	1.2580692	503.899
40471.	14671.	29149.5	405.05	381.75	1110.	.0010718	.0010836	.4653845	.4697019	1.01895	1.01895	.6797196	509.958
38759.	11459.	8155.15	366.65	366.45	1310.	.0010386	.001082	.4845022	.4929498	1.000505	1.000505	2.2567229	511.289
34950.	32150.	8619.2	368.15	367.95	1660.	.0010398	.0010742	.533697	.5473418	1.0055	1.0055	2.1244016	514.095
23090.	10990.	5712.38	357.35	357.25	2360.	.001032	.0010645	.7879954	.7900866	1.00284	1.00284	3.0172286	523.241
25550.	23550.	13384.5	379.45	379.25	1260.	.0010487	.0010679	.711776	.7306371	1.00889	1.00889	1.4009369	520.483
34764.	11464.	15556.69	385.05	374.85	1470.	.0010534	.001078	.5366414	.4929498	1.01076	1.01076	1.2187133	514.095

TYPE DAT304.FOR

H	Ho	Hfg	Cp	Cf	Cg
1.10065766	30.	584.08	.982507555	.998	.4486
1.24046438	73.	556.52	.98163891	1.0013	.4641
1.20397215	61.514	562.9385	.979319067	1.00015	.4586
1.37085138	108.2	536.347	.993249882	1.0094	.4928
1.3665445	126.965	523.241	.992180218	1.00901	.49137
1.39633658	144.923	511.289	.995857272	1.012	.5005
1.20558681	62.1	562.9385	.979615915	1.00019	.45876
1.29763209	87.7	547.8814	.985788328	1.0035	.47925
1.34428995	126.359	536.344	.990169667	1.00715	.48455
1.12361226	40.1	540.541	.980440977	.998	.4498
1.28040566	82.9	540.541	.984024858	1.00254	.47089
1.35541697	109.	540.726	.991239175	1.00808	.48796
1.36618517	127.571	540.915	.992303369	1.00898	.49126
	52.575	550.935		.99924	.4542
	82.828	534.151		1.00254	.47089
	99.3	540.541		1.00673	.48328
	110.1	533.443		1.00925	.49236
	132.438	518.367		1.00958	.49346
	93.6	544.547		1.00499	.47864
	95.1	543.476		1.00544	.47984
	84.242	549.483		1.00282	.47187
	106.463	535.603		1.00883	.49071
	112.119	532.7765		1.01068	.49687

B> DAT. 305

AKg	AKf	Vf	Vg	V=Vhne
1.3297	469950.	.0000653	28.71746	.000985413637
1.3257	66715.	.0132131	4.7230269	.00100410283
1.32714	111312.2	.0003276	7.1238095	.000997714351
1.3236	16432.	.0009031	1.454306	.00103319552
1.32334	17310.8	.0009319	.7910185	.00103209151
1.321	12830.	.0255486	.4674012	.00103992373
1.326815	109387.55	3.2051459	3.918336	.000997978216
1.32425	36285.	.0009075	2.5811831	.00101573061
1.3219	21502	.0298669	1.0803089	.00102653893
1.3219	336450.	.014196	20.896997	.000987233571
1.32473	44089.8	.0008805	3.2998607	.00101203273
1.32128	19406.4	.0118014	1.3602724	.00102928338
1.32068	17378.4	.0277689	.8178555	.00103199996
1.32776	172096.	.507886	22.638714	.0010121
1.32473	44089.8	.0006657	6.6876167	.0010292
1.32218	31874.2	.0548081	3.5881558	.0010361
1.3205	16770.	.0027243	2.5183012	.0010437
1.32028	16026.4	.0195854	.699315	.0010606
1.32334	28794.6	.0003934	4.5710802	.0010361
1.32304	27237.6	.0004333	4.2929683	.0010361
1.32459	41813.4	.0006928	6.0948922	.0010292
1.32078	17716.4	.0008005	2.8211937	.0010437
1.32166	20690.8	.0218855	2.4332227	.00110519

```

B>
B>TYPE DAT306.FOR
Pc      ROfo      AK      N      S
490.    92.081    470036.5  .0002289  1.2536
3428.3  92.56688    66787.07  .0210448  1.256284
2118.194 92.021717    111294.32 .0002289  19.7137
12261.668 91.877986    16430.934 .0006776  11.157558
23064.766 91.033227    17309.677 .001141   9.058437
38112.49  91.54994    12829.734 .3781344  7.70223
2108.793  91.692646    109366.67  1.        19.544913
6163.41   91.633831    36279.645 .0003304  13.913575
11932.34  91.659028    21500.145 .1949528  10.068989
9549.546  91.726288    336379.62 .0050883  27.4841
9462.946  91.726288    44083.178 .0003157  14.645727
9379.166  93.214019    19405.24  .0666799  10.83635
9303.813  91.659028    17377.295 .2554237  8.999423
1349.3    92.267946
5114.     92.945441
9384.5    93.388121
13650.    91.332541
27055.68  92.27646
7691.6    92.353158
8136.     92.66123
5403.393  93.940817
12560.    93.597903
14582.    92.936802

```

```

//
TYPE DAT307.FOR
Burnell  Tc*      a      V*      T*      B>TYPE DAT308.FOR
.423557  -14.1443    15830.    1.000313  -.0009802  K1      K2
.3897    -1.8484723  11348.624  1.00294   -.0049935  3336601.6 -3336601.6
.399672  -.000183629  14783.499  7428.2202 -.0002988  68122.102 -68122.021
.3607703 -.000162912  13556.153  1411.5175 -.0002623  .6158066  -.5492779
.3617747 -.006678556  10708.859  755.82487 -.0495433  3.7745286 -3.7034173
.3548311 -.000084446  13287.065  468.55345 -.0697423  1.1167111 -1.0281816
.3992955 -.000039063  16546.867  7426.0296 -.0001492  1.1034059 -1.0329617
.3778371 -.079215835  15368.06  2686.8041 -.0002772  1.6246958 -1.5652779
.3609615 -.008794028  13742.294  1400.9478 -.0395836  2.4067018 -2.343484
.4184115 -.000743026  17100.398  6.9570137 -.0015992  1.0882752 -1.0188076
.3818527 -.000190892  15020.197  1.7777669 -.0002809  1.2354929 -1.1775489
.3643681 -.00281972   14926.681  1753.8314 -.0136143  4581.1891 -4581.1243
.3618584 -.00572124   13584.418  1782.4525 -.0512179  1.1068782 -1.0429105
                                1.0813015 -1.0115599

```

添付書類

7) 1)

```
--
type fur5.for
C      HANS K. FAUSKE
      INTEGER T,P(70),T0
      P(T0)=0
      P0=1.4
      GERM=1.
      R1=1.
      T=1
      DO 10 I=1,50
      T=T+1
      P(T0)=T*P(T0)
      P(I)=P(T0)+T
      GERM=1.3*(1.59*P(I)**(1.3)+2.7*P(I)**(-1.5)+P(I)**(-.5))*T**(.5)
      G=SQRT(2*(P0-P(I))*R1+GERM**2)

      WRITE(*,30) P(I),G
30      FORMAT(1H ,16,F14.6)

      IF (G-52500.) 10,40,40

10      CONTINUE
40      WRITE(*,20) P(I),G
20      FORMAT(1H ,16,F14.6)
      STOP
      END

B>type fur7.for
C      J.C.LEUNG AND M.A.GROLMES
C      FUNCTION OMEGA(PS)
C      *** J.S.M.E. Steam Table ***
C      CFO=1.
C      TO=120.
C      VFO=1.
C      VGO=10.
C      VFGO=ABS(VGO-VFO)
C      HFO=10.
C      HGO=20.
C      HFGO=ABS(HFO-HGO)
C      PA=EXP(7.21+(1.15*E-5-4.79*E-9*TO)*(TO-483.16)**2)
C      PS=225.65*E4/PA**((647.31/TO-1.))
C      OMEGA=(CFO*TO*PS/VFO)*(VFGO/HFGO)**2
C      RETURN
C      END
```



```
C      *** J.C.Leung & M.A.Grolmes ***
      REAL K, KK, KKK
      P0=42990.
      D=.025
      S=3.1415*D*.0024
      EATHS=.0119283
      OMEGA=.2364543
      O=OMEGA
      DO 30 J=1,100

      AJ=J
      ES=(EATHS+AJ)*1.E-2
      AA=(2.*ES*O)/(2.*O-1.)
      BB=1.-(ABS(1.-(2.*O-1.)/(2.*O*ES)))*.5
      EC=AA*BB
      KK=(ES*P0)/(756.25*S**2*(P0+1.)*O)
      KKK=(2.*O/(2.*O-1.))*(1.-(ABS(1.-(2.*O-1.)/(2.*O*ES)))*.5)
      KKS=KKK**2
      K=KK*KKS
      IF(K-1.) 50,50,30
50     WRITE(*,40) K,ES,EC
40     FORMAT(5X,3E15.7)
30     CONTINUE
      STOP
      END
```

*)

```
B>type fur11.for
      FUNCTION AJBES(NN,X)
C      BESSEL FUNCTION J
      ONE=1.
      E25=1.E-25
      N=IABS(NN)
      XA=ABS(X)
      IF(N-30000) 8,900,900
      IF(XA-3.E4) 9,900,900
8      CONTINUE
9      IF(XA-2.E-5) 1,1,10
1      IF(N) 3,2,3
2      AJABES=ONE
      GO TO 1000
3      IF(N-7) 4,500,500
4      T1=.5*X
      T2=ONE
      T3=ONE
      DO 5 I=1,N
      T3=T3*T1/T2
      T2=T2+ONE
5      CONTINUE
      BJ=T3
      GO TO 300
10     Z=2./X
      IF(XA-100.) 92,91,91
91     L=.05*XA+28.
      GO TO 15
92     IF(XA-10.) 94,93,93
93     L=.2*XA+13.
      GO TO 15
94     IF(XA-1.) 96,96,95
95     L=XA+5.
      GO TO 15
96     L=6
15     NM=MAX0(N,IFIX(XA))+L
20     T3=0.
      T2=1.E-35
      S=0.
      IF(MOD(NM,2)) 22,21,22
21     NM=NM+1
22     DO 100 I=1,NM,2
      K=NM-I+1
      T1=FLOAT(K+1)*T2*Z-T3
      IF(N-K) 50,45,50
45     QJ=T1
50     S=S+T1
      IF(ABS(S)-1.E25) 80,60,60
60     T1=T1*E25
      T2=T2*E25
```

```
-----  
S=S*E25  
70 IF(N-K) 80,70,70  
80 QJ=QJ*E25  
T3=T2  
T2=T1  
100 CONTINUE  
S=S+S-T1  
BJ=QJ/S  
300 IF(NN) 700,600,600  
500 AJBES=0.  
GO TO 1000  
600 AJBES=BJ  
AJBES=AJBES*10.E5  
GO TO 1000  
700 IF(MOD(N,2)) 800,600,800  
800 AJBES=-BJ  
AJBES=AJBES*10.E5  
GO TO 1000  
900 WRITE(*,1001) NN,X  
GO TO 500  
1000 RETURN  
1001 FORMAT(16H NOT ACCURATE N=,I7,10X,2HX=,E14.7)  
END
```

1)

```

C      ***** FUR11.FOR *****
      INTEGER T,P(70),T0
      P(T0)=0
      P0=1.4
      R1=1.
      T=1
      DO 10 I=1,50
      T=T+1
      P(T0)=T*P(T0)
      P(I)=P(T0)+T
      G=SQRT(ABS(2*(P0-P(I))*R1+AJBES(NN,X)**2))
30      WRITE(*,30) P(I),G
      FORMAT(1H ,16,F14.6)
      IF(G-22500.) 10,40,40
10      CONTINUE
40      WRITE(*,20) P(I),G
20      FORMAT(1H ,16,E14.6)
      STOP
      END

```

```

B>type fur12.for
      FUNCTION OMEGA(PS,T0)
      INTEGER TO
      CFO=1.
      VFO=1.
      TO=120.5
      PS=1.4
      OMEGA=1.4
      HFGO=538.99
      VF=1.
      VG=12.4
      VFGO=VG-VF
      DO 1 I=1,200,2
      BI=I
      TO=TO+BI
      DO 10 J=1,100
      AJ=J
      PS=PS+AJ
      PS=(3./5.)*TANH(PS)
10      OMEGA=((CFO*TO*PS)/VFO)*(VFGO/HFGO)**2
1      CONTINUE
      RETURN
      END

```

```

C   ***   J.C. LEUNG & M.A. GROLMES   ***
      REAL KK
      INTEGER TO
      P0=1.5
      S=3.1415*2.*.8
      EATHC=5.
      EATHS=2.6
      DO 30 J=1,100
      P=1.
      AJ=J
      EJ=EATHS+P+AJ
      IF(OMEGA(PS,TO)-1.) 10,20,10
      IF(OMEGA(PS,TO)) 10,20,10
10    AA=EJ*2.*OMEGA(PS,TO)/(.6795*(2.*OMEGA(PS,TO)-1.))
      BB=1.-(1.-ABS((2.*OMEGA(PS,TO)-1.)/(2.*OMEGA(PS,TO)*EJ)))*.5
      KK=(AA/BB)**2
      EEJ=EJ-4.5
      IF(KK-500) 30,30,50
50    WRITE(*,40) EEJ, KK
40    FORMAT(1H ,F5.1,E15.6)
30    CONTINUE
20    STOP
      END

```

```

B>type fur13.for
      function gamma(xx)
c      gamma function
        x=xx
        if(x-34.) 201,201,202
201      continue
        if(1.5-x) 2,1,1
1       if(x-.5) 3,11,11
11      a=x-1.
        fctr=1.
        go to 101
2       m=int(x)
        a=x-float(m)
        if(.5-a) 5,4,4
4       mg=m-1
        go to 6
5       mg=m
        a=a-1.
6       z=1.
        do 10 i=1,mg
        z=z*(x-1.)
10      x=x-1.
        fctr=z
        go to 101
3       m=int(x)
        a=x-float(m)+1.
        if(a) 203,204,203
203     continue
        if(.5+a) 8,7,7
7       mg=iabs(m)+1
        go to 9
8       mg=iabs(m)+2
        a=a+1.
9       z=1.
        do 20 i=1,mg
        z=z*x
20      x=x+1.
        fctr=1./(z+1.)
101     continue

        b=(((-.175459e-4*a+.145596e-3)*a-.360839e-3)*a-.80433e-3)
        c((((b*a+.802327e-2)*a-.0176452e-1)*a-.245525e-1)*a+.191091)
        d((((c*a-.2330937)*a-.4227843)*a+1.)
        gamma=fctr/((1.+a)/(d+1.))

        go to 900
202     write(*,2001) x
        gamma=1.e38
        go to 900
204     write(*,2002) x
        gamma=1.e38
900     continue
        return
2001    format(31h value of gamma is overflow x=e14.7)
2002    format(33h argument of gamma is invalid x=e14.7)
      end

```

```

C      **** EPSTEIN & R.HENRY ****
C      **** G-PL ****
      DIMENSION B(1100)

      REAL AI
      PL=3.1
1      DO 2 I=1,1000,10
      PL=1.1
      AI=1
      PPL=PL+AI
      B(I)=(PPL-1.)/(PPL**(1./Gamma(xx))-1.)
      WRITE(*,20) PPL,B(I)
20     FORMAT(5X,2E15.4)
      CONTINUE
      STOP
      END

```

```
B>type fur14.d for
  DIMENSION B(150)
  REAL AI
  VL=1.
  DO 2 I=1,100
    AI=I
    VL=VL+AI
    PPL=EXP(7.21+(1.15*E-5-4.79*E-9*VL)*(VL-483.16)**2)
    PPPL=EXP(647.31/VL-1.)
    PL=225.65*E4/(PPL+PPPL)
    B(I)=(PL-1.)/(1./VL-1.)
    WRITE(*,20) PL,B(I)
    FORMAT(5X,2E15.5)
  CONTINUE
  STOP
  END
```

20
2

計測データに対する $1/\omega_{(p_0)}$ の値を求めるプログラム (Γ 関数を文関数定義) を添付書類に、その結果例を図38に示す。これにより、 $1/\omega$ と P_0 間の曲線を近似する。

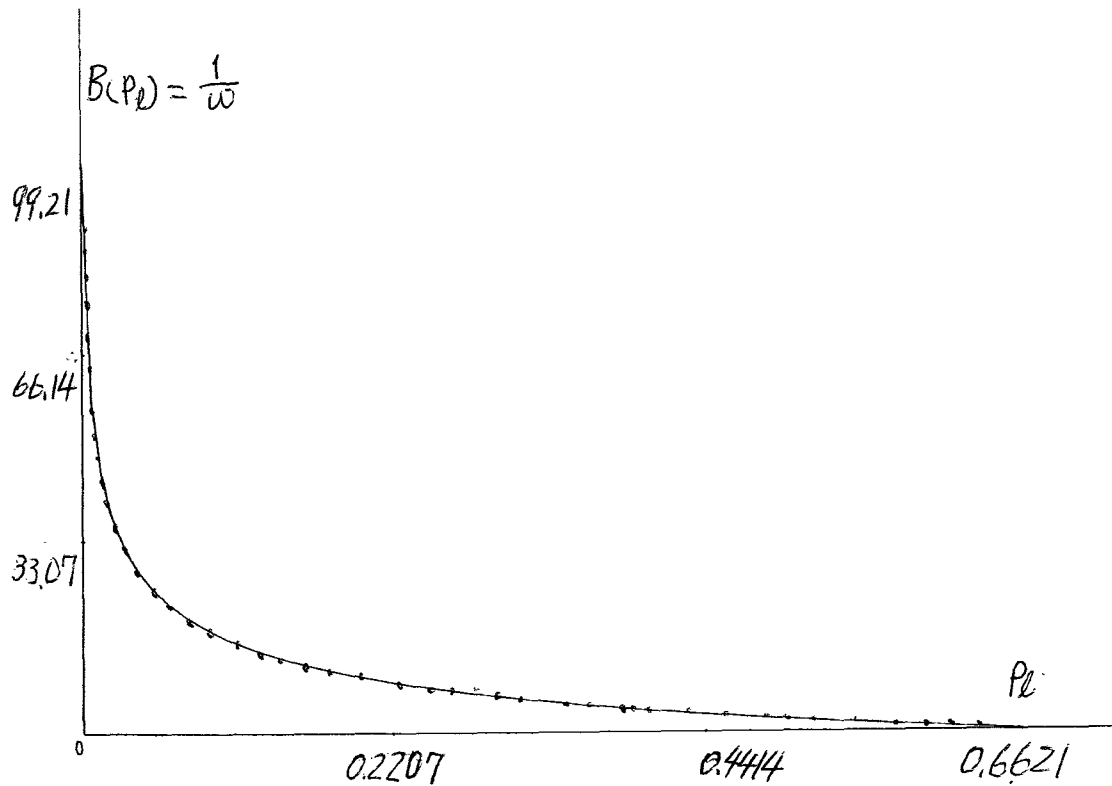


図38 $\beta(p_0)$ と P_0 の関係 ($P_2 = 3.0 \text{ kg/cm}^2$)

le name missing or blank - try again!

UNIT 3 ? DAT00.FOR

To=.30605E+03 Po=.42990E+05 T1=.30575E+03
Vhne=.44380E+00 Ho=.30000E+02 H=.11007E+01
Pc=.29549E+03 ETc=.68735E-02 ETs=.11928E-01

カ) Burnellの式によるP.

Xo=-.184180700D-03

X=.340246100D-06 P1=.30090E+05

C=.98251E+00 AK=.46995E+06 V=.98541E-03

OMEGA=.252169000D+00

Ghem1=.170246897D+04

Ghe10=.567489595D+03

Ghem2=.199979616D+05

Ghe20=.666598648D+04

Ghe30=.365429396D+04

Ghnel=.217713543D+05

Ghn10=.725711730D+04

Ghne2=.552629760D+03

Ghn20=.184209900D+03

Gsel=.940981892D+03

Gsel0=.313660597D+03

Gbur1=.611354534D+04

Gbul0=.203784823D+04

Gdan1=.305871248D+03

Gdal0=.101957072D+03

Gwl=.103439840D+05

Gwl0=.344799429D+04

Giecl=.903035478D+04

Giel0=.301011800D+04

Stop - Program terminated.

Ahem1=.152719377D+01

Ahe10=.458158180D+01

Ahem2=.130013251D+00

Ahe20=.390039795D+00

Ahe30=.711491749D+00

Ahnel=.119422980D+00

Ahn10=.358268978D+00

Ahne2=.470477739D+01

Ahn20=.141143337D+02

Asel=.276307124D+01

Asel0=.828921461D+01

Abur1=.425285142D+00

Abul0=.127585557D+01

Adan1=.850030860D+01

Adal0=.255009286D+02

Aw1=.251353830D+00

Aw10=.754061573D+00

Aiecl=.287917813D+00

Aiel0=.863753600D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT01.FOR

To=.34645E+03 Po=.34490E+05 T1=.34472E+03
Vhne=.11507E+01 Ho=.73000E+02 H=.12405E+01
Pc=.22284E+04 ETc=.64610E-01 ETs=.10612E+00
Xo=-.101855800D-03

X=.263366900D-05 P1=.14590E+05

C=.98164E+00 AK=.66715E+05 V=.10041E-02

OMEGA=.311986800D+01

Ghem1=.136978809D+04

Ghe10=.456595982D+03

Ghem2=.172004975D+05

Ghe20=.573349853D+04

Ghe30=.233663709D+04

Ghnel=.183717497D+05

Ghn10=.612391591D+04

Ghne2=.212310771D+03

Ghn20=.707702494D+02

Gsel=.510603451D+03

Gsel0=.170201132D+03

Gbur1=.532810423D+04

Gbul0=.177603455D+04

Gdan1=.257276693D+03

Gdal0=.857588885D+02

Gwl=.982961601D+04

Gwl0=.327653832D+04

Giecl=.884218187D+04

Giel0=.294739400D+04

Stop - Program terminated.

Ahem1=.147468065D+01

Ahe10=.442404244D+01

Ahem2=.117438464D+00

Ahe20=.352315430D+00

Ahe30=.864490258D+00

Ahnel=.109951422D+00

Ahn10=.329854301D+00

Ahne2=.951435477D+01

Ahn20=.285430674D+02

Asel=.395610331D+01

Asel0=.118683112D+02

Abur1=.379121712D+00

Abul0=.113736526D+01

Adan1=.785146907D+01

Adal0=.235544098D+02

Aw1=.205501415D+00

Aw10=.616504312D+00

Aiecl=.228450402D+00

Aiel0=.685351300D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT02.FOR

To=.33465E+03 Po=.44180E+05 T1=.33455E+03
 Vhne=.87809E+00 Ho=.61514E+02 H=.12040E+01
 Pc=.13368E+04 ETc=.30259E-01 ETs=.50404E-01
 Xo=-.160733700D-03
 X=.266152100D-07 P1=.18280E+05
 C=.97932E+00 AK=.11131E+06 V=.99771E-03

OMEGA= .114980800D+01
 Ghem1= .173022435D+04
 Ghe10= .576741388D+03
 Ghem2= .200062968D+05
 Ghe20= .666876489D+04
 Ghe30= .445398758D+04
 Ghnel= .213470748D+05
 Ghn10= .711569083D+04
 Ghne2= .460446587D+03
 Ghn20= .153482179D+03
 Gsel= .673970213D+03
 Gsel0= .224656713D+03
 Gbur1= .612175467D+04
 Gbul0= .204058467D+04
 Gdan1= .411870658D+02
 Gdal0= .137290205D+02
 Gwl= .282266643D+05
 Gwl0= .940888709D+04
 Giecl= .249373878D+05
 Giel0= .831246200D+04
 Stop - Program terminated.

Ahem1= .890057986D+00
 Ahe10= .267017425D+01
 Ahem2= .769757649D-01
 Ahe20= .230927320D+00
 Ahe30= .345757588D+00
 Ahnel= .721410317D-01
 Ahn10= .216423119D+00
 Ahne2= .334457903D+01
 Ahn20= .100337382D+02
 Ase1= .228496745D+01
 Ase10= .685490310D+01
 Abur1= .251561862D+00
 Abul0= .754685666D+00
 Adan1= .373903790D+02
 Adal0= .112171149D+03
 Awl= .545583418D-01
 Awl0= .163675043D+00
 Aiecl= .617546638D-01
 Aiel0= .185264000D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT03.FOR

To=.38115E+03 Po=.46980E+05 T1=.38105E+03
 Vhne=.15755E+01 Ho=.10820E+03 H=.13709E+01
 Pc=.83499E+04 ETc=.17773E+00 ETs=.27804E+00
 Xo=-.964026100D-04
 X=.786743500D-07 P1=.11980E+05
 C=.99325E+00 AK=.16432E+05 V=.10332E-02

OMEGA= .709566600D+01
 Ghem1= .179484596D+04
 Ghe10= .598281923D+03
 Ghem2= .186689512D+05
 Ghe20= .622298308D+04
 Ghe30= .182195945D+04
 Ghnel= .194373910D+05
 Ghn10= .647912962D+04
 Ghne2= .139969831D+03
 Ghn20= .466566054D+02
 Gsel= .478081191D+03
 Gsel0= .159360380D+03
 Gbur1= .580860511D+04
 Gbul0= .193620150D+04
 Gdan1= .298109394D+02
 Gdal0= .993697874D+01
 Gwl= .314809678D+05
 Gwl0= .104936548D+05
 Giecl= .302037625D+05
 Giel0= .100679200D+05
 Stop - Program terminated.

Ahem1= .757725191D+00
 Ahe10= .227317582D+01
 Ahem2= .728482271D-01
 Ahe20= .218544705D+00
 Ahe30= .746449103D+00
 Ahnel= .699682381D-01
 Ahn10= .209904737D+00
 Ahne2= .971637951D+01
 Ahn20= .291491417D+02
 Ase1= .284470509D+01
 Ase10= .853411620D+01
 Abur1= .234135386D+00
 Abul0= .702406234D+00
 Adan1= .456208367D+02
 Adal0= .136862525D+03
 Awl= .432007048D-01
 Awl0= .129602129D+00
 Aiecl= .450275028D-01
 Aiel0= .135082500D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT04.FOR

To=.39965E+03 Po=.49188E+05 T1=.37985E+03
 Vhne=.14138E+01 Ho=.12696E+03 H=.13665E+01
 Pc=.15817E+05 ETc=.32157E+00 ETs=.50385E+00
 Xo=-.633457600D-04
 X= .298025900D-04 P1=.13288E+05
 C=.99218E+00 AK=.17310E+05 V=.10321E-02

OMEGA= .205565200D+02
 Ghem1= .144401147D+04 Ahem1= .367033097D+00
 Ghe10= .481337103D+03 Ahe10= .110109941D+01
 Ghem2= .171211175D+05 Ahem2= .309559233D-01
 Ghe20= .570703855D+04 Ahe20= .928677799D-01
 Ghe30= .114508482D+04 Ahe30= .462847810D+00
 Ghnel= .183705890D+05 Ahnel= .288504631D-01
 Ghn10= .612352900D+04 Ahn10= .865513987D-01
 Ghne2= .911609414D+02 Ahne2= .581389345D+01
 Ghn20= .303869772D+02 Ahn20= .174416822D+02
 Gsel= .469873210D+03 Ase1= .112796386D+01
 Gsel0= .156624386D+03 Ase10= .338389195D+01
 Gbur1= .537559990D+04 Abur1= .985936471D-01
 Gbu10= .179186644D+04 Abu10= .295780973D+00
 Gdan1= .473362494D+03 Adan1= .111964933D+01
 Gda10= .157787481D+03 Ada10= .335894836D+01
 Gw1= .731129126D+04 Aw1= .724906150D-01
 Gw10= .243709682D+04 Aw10= .217471869D+00
 Giecl= .772255821D+04 Aiecl= .686301075D-01
 Giel0= .257418600D+04 Aiel0= .205890300D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT05.FOR

To=.41725E+03 Po=.49487E+05 T1=.38815E+03
 Vhne=.10334E+01 Ho=.14492E+03 H=.13963E+01
 Pc=.26666E+05 ETc=.53886E+00 ETs=.83522E+00
 Xo=-.208223700D-04
 X= .433606500D-04 P1=.18487E+05
 C=.99586E+00 AK=.12829E+05 V=.10399E-02

OMEGA= .216242000D+02
 Ghem1= .184259496D+04 Ahem1= .407034653D+00
 Ghe10= .614198254D+03 Ahe10= .122110409D+01
 Ghem2= .144682245D+05 Ahem2= .518377358D-01
 Ghe20= .482274099D+04 Ahe20= .155513224D+00
 Ghe30= .111889437D+04 Ahe30= .670304561D+00
 Ghnel= .146194141D+05 Ahnel= .513016457D-01
 Ghn10= .487313749D+04 Ahn10= .153904954D+00
 Ghne2= .105482714D+03 Ahne2= .711016975D+01
 Ghn20= .351609008D+02 Ahn20= .213305116D+02
 Gsel= .461891451D+03 Ase1= .162375813D+01
 Gsel0= .153963800D+03 Ase10= .487127493D+01
 Gbur1= .445656583D+04 Abur1= .168291018D+00
 Gbu10= .148552178D+04 Abu10= .504873108D+00
 Gdan1= .421097794D+03 Adan1= .178105896D+01
 Gda10= .140365916D+03 Ada10= .534317746D+01
 Gw1= .642647607D+04 Aw1= .116704706D+00
 Gw10= .214215846D+04 Aw10= .350114155D+00
 Giecl= .823329586D+04 Aiecl= .910935321D-01
 Giel0= .274443200D+04 Aiel0= .273280600D+00
 Stop - Program terminated.

B>FUR00

D>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT06.FOR

To=.33505E+03 Po=.49406E+05 T1=.33500E+03
 Vhne=.14360E+01 Ho=.87700E+02 H=.12056E+01
 Pc=.13317E+04 ETc=.26955E-01 ETs=.44872E-01
 Xo=-.190939500D-03
 X=-.513366000D-07 P1=.11406E+05
 C=.97962E+00 AK=.10939E+06 V=.99798E-03
 OMEGA= .909788600D+00
 Ghem1= .193855769D+04 Ahem1= .428153367D+00
 Ghe10= .646185826D+03 Ahe10= .128446024D+01
 Ghem2= .211958772D+05 Ahem2= .391585587D-01
 Ghe20= .706529163D+04 Ahe20= .117475689D+00
 Ghe30= .534936018D+04 Ahe30= .155158743D+00
 Ghne1= .226733341D+05 Ahne1= .366068791D-01
 Ghn10= .755777722D+04 Ahn10= .109820649D+00
 Ghne2= .428351693D+03 Ahne2= .193766013D+01
 Ghn20= .142783882D+03 Ahn20= .581298103D+01
 Gsel= .558402733D+03 Ase1= .148638241D+01
 Gsel0= .186134224D+03 Ase10= .445914771D+01
 Gbur1= .647326985D+04 Abur1= .128219589D+00
 Gbu10= .215775638D+04 Abu10= .384658809D+00
 Gdan1= .630521353D+02 Adan1= .131637096D+02
 Gda10= .210173762D+02 Ada10= .394911331D+02
 Gw1= .241233629D+05 Aw1= .344064799D-01
 Gw10= .804112008D+04 Aw10= .103219451D+00
 Giec1= .212760287D+05 Aiec1= .390110397D-01
 Gie10= .709200900D+04 Aie10= .117033100D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT06.FOR

To=.33505E+03 Po=.49406E+05 T1=.33500E+03
 Vhne=.14360E+01 Ho=.87700E+02 H=.12056E+01
 Pc=.13317E+04 ETc=.26955E-01 ETs=.44872E-01
 Xo=-.190939500D-03
 X=-.513366000D-07 P1=.11406E+05
 C=.97962E+00 AK=.10939E+06 V=.99798E-03
 OMEGA= .909788600D+00
 Ghem1= .193855769D+04 Ahem1= .428153367D+00
 Ghe10= .646185826D+03 Ahe10= .128446024D+01
 Ghem2= .211958772D+05 Ahem2= .391585587D-01
 Ghe20= .706529163D+04 Ahe20= .117475689D+00
 Ghe30= .534936018D+04 Ahe30= .155158743D+00
 Ghne1= .226733341D+05 Ahne1= .366068791D-01
 Ghn10= .755777722D+04 Ahn10= .109820649D+00
 Ghne2= .428351693D+03 Ahne2= .193766013D+01
 Ghn20= .142783882D+03 Ahn20= .581298103D+01
 Gsel= .558402733D+03 Ase1= .148638241D+01
 Gsel0= .186134224D+03 Ase10= .445914771D+01
 Gbur1= .647326985D+04 Abur1= .128219589D+00
 Gbu10= .215775638D+04 Abu10= .384658809D+00
 Gdan1= .630521353D+02 Adan1= .131637096D+02
 Gda10= .210173762D+02 Ada10= .394911331D+02
 Gw1= .241233629D+05 Aw1= .344064799D-01
 Gw10= .804112008D+04 Aw10= .103219451D+00
 Giec1= .212760287D+05 Aiec1= .390110397D-01
 Gie10= .709200900D+04 Aie10= .117033100D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT07.FOR

To=.36075E+03 Po=.49707E+05 T1=.36065E+03
 Vhne=.14202E+01 Ho=.87700E+02 H=.12976E+01
 Pc=.40581E+04 ETc=.81640E-01 ETs=.13122E+00
 Xo=-.147620200D-03
 X= .382747400D-07 P1=.12507E+05
 C=.98579E+00 AK=.36285E+05 V=.10157E-02
 OMEGA= .288755600D+01
 Ghem1= .193248603D+04 Ahem1= .369989738D+00
 Ghe10= .644161940D+03 Ahe10= .110996933D+01
 Ghem2= .204680498D+05 Ahem2= .349324926D-01
 Ghe20= .682268254D+04 Ahe20= .104797489D+00
 Ghe30= .296233377D+04 Ahe30= .241363755D+00
 Ghne1= .216023793D+05 Ahne1= .330982060D-01
 Ghn10= .720079233D+04 Ahn10= .992946287D-01
 Ghne2= .237817158D+03 Ahne2= .300651141D+01
 Ghn20= .792723774D+02 Ahn20= .901953522D+01
 Gsel= .547335743D+03 Ase1= .130632799D+01
 Gsel0= .182445228D+03 Ase10= .391898439D+01
 Gbur1= .630580103D+04 Abur1= .113387656D+00
 Gbul0= .210193345D+04 Abul0= .340163005D+00
 Gdan1= .315272617D+02 Adan1= .226787853D+02
 Gdal0= .105090861D+02 Adal0= .680363634D+02
 Gwl= .332323604D+05 Awl= .215151735D-01
 Gwl0= .110774523D+05 Awl0= .645455276D-01
 Giecl= .301699018D+05 Aiecl= .236991159D-01
 Giel0= .100566300D+05 Aiel0= .710973600D-01
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT08.FOR

To=.38905E+03 Po=.48506E+05 T1=.37365E+03
 Vhne=.16230E+01 Ho=.12636E+03 H=.13443E+01
 Pc=.80445E+04 ETc=.16585E+00 ETs=.26199E+00
 Xo=-.863709000D-04
 X= .233164500D-04 P1=.11406E+05
 C=.99017E+00 AK=.21501E+05 V=.10265E-02
 OMEGA= .658820000D+01
 Ghem1= .181724370D+04 Ahem1= .376944490D+00
 Ghe10= .605747835D+03 Ahe10= .113083359D+01
 Ghem2= .189221888D+05 Ahem2= .362008860D-01
 Ghe20= .630739558D+04 Ahe20= .108602670D+00
 Ghe30= .196890078D+04 Ahe30= .347909862D+00
 Ghne1= .201763046D+05 Ahne1= .339507166D-01
 Ghn10= .672543413D+04 Ahn10= .101852161D+00
 Ghne2= .148433082D+03 Ahne2= .461487421D+01
 Ghn20= .494776885D+02 Ahn20= .138446241D+02
 Gsel= .481734799D+03 Ase1= .142194419D+01
 Gsel0= .160578249D+03 Ase10= .426583304D+01
 Gbur1= .593753594D+04 Abur1= .115367723D+00
 Gbul0= .197917843D+04 Abul0= .346103206D+00
 Gdan1= .533845443D+03 Adan1= .128314292D+01
 Gdal0= .177948462D+03 Adal0= .384942918D+01
 Gwl= .760435748D+04 Awl= .900799313D-01
 Gwl0= .253478555D+04 Awl0= .270239823D+00
 Giecl= .724367220D+04 Aiecl= .945652953D-01
 Giel0= .241455700D+04 Aiel0= .283695900D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT09.FOR

To=.31265E+03 Po=.48010E+05 T1=.31215E+03
 Vhne=.13092E+01 Ho=.40100E+02 H=.11236E+01
 Pc=.42598E+03 ETc=.88728E-02 ETs=.15256E-01
 Xo=-.209153500D-03
 X=.632128300D-06 P1=.11510E+05
 C=.98044E+00 AK=.33645E+06 V=.98723E-03
 OMEGA=.301037300D+00
 Ghem1=.187574787D+04 Ahem1=.706918034D+00
 Ghe10=.625249224D+03 Ahe10=.212075433D+01
 Ghem2=.211857012D+05 Ahem2=.625893846D-01
 Ghe20=.706189963D+04 Ahe20=.187768174D+00
 Ghe30=.764664775D+04 Ahe30=.173409322D+00
 Ghnel=.228970200D+05 Ahnel=.579114663D-01
 Ghn10=.763233916D+04 Ahn10=.173734418D+00
 Ghne2=.798335217D+03 Ahne2=.166095641D+01
 Ghn20=.266111710D+03 Ahn20=.498286978D+01
 Gsel=.581936088D+03 Ase1=.227860074D+01
 Gsel0=.193978675D+03 Ase10=.683580296D+01
 Gbur1=.644118190D+04 Abur1=.205862840D+00
 Gbul0=.214706040D+04 Abul0=.617588587D+00
 Gdan1=.111366589D+03 Adan1=.119066231D+02
 Gdal0=.371221923D+02 Adal0=.357198732D+02
 Gwl=.180614327D+05 Awl=.734161029D-01
 Gwl0=.602047691D+04 Awl0=.220248333D+00
 Giecl=.157836238D+05 Aiecl=.840111255D-01
 Giel0=.526120800D+04 Aiel0=.252033400D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT10.FOR

To=.35595E+03 Po=.47912E+05 T1=.35585E+03
 Vhne=.13758E+01 Ho=.82900E+02 H=.12804E+01
 Pc=.33407E+04 ETc=.69726E-01 ETs=.11280E+00
 Xo=-.150240400D-03
 X=.357518700D-07 P1=.12712E+05
 C=.98402E+00 AK=.44090E+05 V=.10120E-02
 OMEGA=.253894100D+01
 Ghem1=.186473382D+04 Ahem1=.506774741D+00
 Ghe10=.621577873D+03 Ahe10=.152032439D+01
 Ghem2=.202622181D+05 Ahem2=.466385268D-01
 Ghe20=.675407196D+04 Ahe20=.139915595D+00
 Ghe30=.310729340D+04 Ahe30=.304123196D+00
 Ghnel=.214442456D+05 Ahnel=.440677662D-01
 Ghn10=.714808108D+04 Ahn10=.132203313D+00
 Ghne2=.252982311D+03 Ahne2=.373543904D+01
 Ghn20=.843274278D+02 Ahn20=.112063183D+02
 Gsel=.549512212D+03 Ase1=.171970701D+01
 Gsel0=.183170717D+03 Ase10=.515912157D+01
 Gbur1=.623391471D+04 Abur1=.151590139D+00
 Gbul0=.207797134D+04 Abul0=.454770468D+00
 Gdan1=.243583225D+02 Adan1=.387957751D+02
 Gdal0=.811943994D+01 Adal0=.116387338D+03
 Gwl=.373767212D+05 Awl=.252831166D-01
 Gwl0=.124589057D+05 Awl0=.758493579D-01
 Giecl=.337143657D+05 Aiecl=.280295945D-01
 Giel0=.112381200D+05 Aiel0=.840887900D-01
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT11.FOR

To=.38195E+03 Po=.51605E+05 T1=.37675E+03
 Vhne=.14899E+01 Ho=.10900E+02 H=.13554E+01
 Pc=.89184E+04 ETc=.17282E+00 ETs=.27189E+00
 Xo=-.598218200D-04
 X=.794909900D-05 P1=.12505E+05
 C=.99124E+00 AK=.19406E+05 V=.10293E-02

OMEGA=.637247500D+01
 Ghem1=.196599696D+04 Ahem1=.361648575D+00
 Ghe10=.655332250D+03 Ahe10=.108494584D+01
 Ghem2=.195333781D+05 Ahem2=.363992340D-01
 Ghe20=.651112533D+04 Ahe20=.109197714D+00
 Ghe30=.203367926D+04 Ahe30=.349612652D+00
 Ghnel=.202587008D+05 Ahnel=.350960314D-01
 Ghn10=.675289955D+04 Ahn10=.105288105D+00
 Ghne2=.160268823D+03 Ahne2=.443629639D+01
 Ghn20=.534229352D+02 Ahn20=.133088906D+02
 Gsel=.516110856D+03 Ase1=.137761101D+01
 Gsel0=.172036933D+03 Ase10=.413283349D+01
 Gbur1=.615022305D+04 Abur1=.115605563D+00
 Gbu10=.205007413D+04 Abul0=.346816727D+00
 Gdan1=.374393353D+03 Adan1=.189907218D+01
 Gdal0=.124797771D+03 Adal0=.569721715D+01
 Gw1=.940569473D+04 Aw1=.755925023D-01
 Gw10=.313523124D+04 Aw10=.226777531D+00
 Giecl=.899726162D+04 Aiecl=.790240442D-01
 Giel0=.299908700D+04 Aiel0=.237072200D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT12.FOR

To=.40025E+03 Po=.49110E+05 T1=.37975E+03
 Vhne=.13694E+01 Ho=.12757E+03 H=.13662E+01
 Pc=.16106E+05 ETc=.32796E+00 ETs=.51394E+00
 Xo=-.620566600D-04
 X=.308434800D-04 P1=.13710E+05
 C=.99230E+00 AK=.17378E+05 V=.10320E-02

OMEGA=.130814800D+02
 Ghem1=.183204732D+04 Ahem1=.322589920D+00
 Ghe10=.610682375D+03 Ahe10=.967769865D+00
 Ghem2=.169220037D+05 Ahem2=.349249420D-01
 Ghe20=.564066731D+04 Ahe20=.104774837D+00
 Ghe30=.144043153D+04 Ahe30=.410293714D+00
 Ghnel=.182573268D+05 Ahnel=.323705659D-01
 Ghn10=.608577494D+04 Ahn10=.971117082D-01
 Ghne2=.116128629D+03 Ahne2=.508918435D+01
 Ghn20=.387095388D+02 Ahn20=.152675547D+02
 Gsel=.474520623D+03 Ase1=.124546747D+01
 Gsel0=.158173524D+03 Ase10=.373640281D+01
 Gbur1=.536222583D+04 Abur1=.110215425D+00
 Gbu10=.178740842D+04 Abul0=.330646311D+00
 Gdan1=.685100029D+03 Adan1=.862647753D+00
 Gdal0=.228366652D+03 Adal0=.258794354D+01
 Gw1=.606222643D+04 Aw1=.974889352D-01
 Gw10=.202074193D+04 Aw10=.292466837D+00
 Giecl=.643361421D+04 Aiecl=.918612743D-01
 Giel0=.214453800D+04 Aiel0=.275583900D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT13.FOR

To=.32555E+03 Po=.40300E+05 T1=.32545E+03
Vhne=.14043E+01 Ho=.52575E+02 H=.11713E+01
Pc=.83920E+03 ETc=.20824E-01 ETs=.35133E-01
Xo=-.150494700D-03

X= .343802500D-07 P1=.11300E+05

C=.97904E+00 AK=.17210E+06 V=.14043E+01

OMEGA= .844259100D+00

Ghem1= .159177955D+04 Ahem1= .165537999D+01

Ghe10= .530593124D+03 Ahe10= .496614049D+01

Ghem2= .511827688D+03 Ahem2= .514821699D+01

Ghe20= .170609211D+03 Ahe20= .154446526D+02

Ghe30= .132687738D+03 Ahe30= .198586549D+02

Ghne1= .546804776D+03 Ahne1= .481890451D+01

Ghn10= .182268239D+03 Ahn10= .144567151D+02

Ghne2= .403273199D+03 Ahne2= .653403204D+01

Ghn20= .134424385D+03 Ahn20= .196020982D+02

Gsel= .511529172D+03 Asel= .515122137D+01

Gsel0= .170509705D+03 Asel0= .154536658D+02

Gbur1= .588305395D+04 Abur1= .447896623D+00

Gbul0= .196101777D+04 Abul0= .134369002D+01

Gdan1= .132716760D+01 Adan1= .198543123D+04

Gdal0= .442389151D+00 Adal0= .595629435D+04

Gwl= .151113756D+06 Awl= .174371948D-01

Gwl0= .503712466D+05 Awl0= .523115900D-01

Giec1= .132859560D+06 Aiec1= .198329725D-01

Giel0= .442865200D+05 Aiel0= .594989200D-01

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT14.FOR

To=.35595E+03 Po=.32450E+05 T1=.37235E+03
Vhne=.55792E+00 Ho=.82828E+02 H=.12804E+01
Pc=.34153E+04 ETc=.10525E+00 ETs=.16654E+00
Xo=-.765942000D-04

X=-.265609300D-04 P1=.30150E+05

C=.98402E+00 AK=.44091E+05 V=.99279E-03

OMEGA= .530433300D+01

Ghem1= .132798906D+04 Ahem1= .121235939D+01

Ghe10= .442662972D+03 Ahe10= .363707855D+01

Ghem2= .173251166D+05 Ahem2= .929286676D-01

Ghe20= .577503824D+04 Ahe20= .278786033D+00

Ghe30= .180522020D+04 Ahe30= .891857955D+00

Ghne1= .165353163D+05 Ahne1= .973673542D-01

Ghn10= .551177151D+04 Ahn10= .292102094D+00

Ghne2= .221178022D+03 Ahne2= .727920425D+01

Ghn20= .737259995D+02 Ahn20= .218376151D+02

Gsel= .706339469D+03 Asel= .227935726D+01

Gsel0= .235446464D+03 Asel0= .683807253D+01

Gbur1= .506604669D+04 Abur1= .317802046D+00

Gbul0= .168868205D+04 Abul0= .953406240D+00

Gdan1= .503308187D+03 Adan1= .319883531D+01

Gdal0= .167769378D+03 Adal0= .959650696D+01

Gwl= .668215090D+04 Awl= .240940383D+00

Gwl0= .222738339D+04 Awl0= .722821228D+00

Giec1= .614587904D+04 Aiec1= .261964154D+00

Giel0= .204862600D+04 Aiel0= .785892500D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT15.FOR

To=.37235E+03 Po=.28650E+05 T1=.37225E+03
Vhne=.68155E+00 Ho=.99300E+02 H=.13393E+01
Pc=.62985E+04 ETc=.21984E+00 ETs=.34793E+00

Xo=-.440170900D-04

X= .120210100D-06 P1=.26350E+05

C=.98945E+00 AK=.31874E+05 V=.10120E-02

OMEGA= .123058500D+02

Ghem1= .118648764D+04 Ahem1= .120102389D+01

Ghe10= .395495836D+03 Ahe10= .360307207D+01

Ghem2= .143476855D+05 Ahem2= .993191551D-01

Ghe20= .478256131D+04 Ahe20= .297957497D+00

Ghe30= .109174091D+04 Ahe30= .130525474D+01

Ghne1= .147841985D+05 Ahne1= .963866929D-01

Ghn10= .492806563D+04 Ahn10= .289160110D+00

Ghne2= .126195500D+03 Ahne2= .112920032D+02

Ghn20= .420651622D+02 Ahn20= .338760134D+02

Gsel= .552891667D+03 Ase1= .257735843D+01

Gsel0= .184297202D+03 Ase10= .773207613D+01

Gbur1= .445446351D+04 Abur1= .319903844D+00

Gbu10= .148482101D+04 Abu10= .959711637D+00

Gdan1= .278322108D+02 Adan1= .511996698D+02

Gda10= .927740258D+01 Ada10= .153599026D+03

Gw1= .249853578D+05 Aw1= .570334037D-01

Gw10= .832845171D+04 Aw10= .171100230D+00

Giecl= .246101296D+05 Aiecl= .579029863D-01

Gie10= .820337600D+04 Aie10= .173709000D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT16.FOR

To=.31305E+03 Po=.51800E+05 T1=.38065E+03
Vhne=.12268E+01 Ho=.11010E+03 H=.13694E+01
Pc=.93027E+04 ETc=.17959E+00 ETs=.28109E+00

Xo=-.113834800D-03

X=-.115268800D-03 P1=.26350E+05

C=.99243E+00 AK=.16772E+05 V=.10253E-02

OMEGA= .561571900D+01

Ghem1= .212266819D+04 Ahem1= .753768305D+00

Ghe10= .707555985D+03 Ahe10= .226130516D+01

Ghem2= .223821571D+05 Ahem2= .714855138D-01

Ghe20= .746071823D+04 Ahe20= .214456564D+00

Ghe30= .195054083D+04 Ahe30= .820285315D+00

Ghne1= .192240211D+05 Ahne1= .832292052D-01

Ghn10= .640800636D+04 Ahn10= .249687642D+00

Ghne2= .171205838D+03 Ahne2= .934547571D+01

Ghn20= .570686065D+02 Ahn20= .280364302D+02

Gsel= .616817738D+03 Ase1= .259395912D+01

Gsel0= .205605890D+03 Ase10= .778187821D+01

Gbur1= .607437850D+04 Abur1= .263401433D+00

Gbu10= .202479261D+04 Abu10= .790204384D+00

Gdan1= .938174137D+03 Adan1= .170544032D+01

Gda10= .312724679D+03 Ada10= .511632151D+01

Gw1= .586846056D+04 Aw1= .272643904D+00

Gw10= .195615331D+04 Aw10= .817931801D+00

Giecl= .563673404D+04 Aiecl= .283852314D+00

Gie10= .187891100D+04 Aie10= .851557000D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT17.FOR

To=.40505E+03 Po=.40471E+05 T1=.38175E+03
 Vhne=.12838E+01 Ho=.13244E+03 H=.13734E+01
 Pc=.18650E+05 ETc=.46083E+00 ETs=.72026E+00
 Xo=-.241221900D-04
 X= .349687400D-04 P1=.14671E+05
 C=.99329E+00 AK=.16026E+05 V=.10328E-02
 OMEGA= .220678400D+02
 Ghem1= .152547978D+04 Ahem1= .727639932D+00
 Ghe10= .508493204D+03 Ahe10= .218292003D+01
 Ghem2= .140849035D+05 Ahem2= .788077817D-01
 Ghe20= .469496732D+04 Ahe20= .236423371D+00
 Ghe30= .999059825D+03 Ahe30= .111104458D+01
 Ghne1= .144118668D+05 Ahne1= .770198627D-01
 Ghn10= .480395507D+04 Ahn10= .231059613D+00
 Ghne2= .841287363D+02 Ahne2= .131940648D+02
 Ghn20= .280429091D+02 Ahn20= .395821987D+02
 Gsel= .402540836D+03 Asel= .275748421D+01
 Gsel0= .134180264D+03 Asel0= .827245353D+01
 Gbur1= .437629276D+04 Abur1= .253639338D+00
 Gbul0= .145876410D+04 Abul0= .760918096D+00
 Gdan1= .371236081D+03 Adan1= .299001109D+01
 Gdal0= .123745347D+03 Adal0= .897003425D+01
 Gwl= .672117703D+04 Awl= .165149645D+00
 Gwl0= .224039210D+04 Awl0= .495448989D+00
 Giecl= .796346123D+04 Aiecl= .139386627D+00
 Giel0= .265448700D+04 Aiel0= .418159900D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT18.FOR

To=.36667E+03 Po=.38759E+05 T1=.36645E+03
 Vhne=.15818E+01 Ho=.93600E+02 H=.13184E+01
 Pc=.51134E+04 ETc=.13193E+00 ETs=.21041E+00
 Xo=-.882350500D-04
 X= .262827700D-06 P1=.11459E+05
 C=.98684E+00 AK=.28795E+05 V=.10338E-02
 OMEGA= .584458300D+01
 Ghem1= .153776852D+04 Ahem1= .851883741D+00
 Ghe10= .512589451D+03 Ahe10= .255565150D+01
 Ghem2= .174134539D+05 Ahem2= .752291882D-01
 Ghe20= .580448400D+04 Ahe20= .225687589D+00
 Ghe30= .182297790D+04 Ahe30= .718604431D+00
 Ghne1= .181804164D+05 Ahne1= .720555552D-01
 Ghn10= .606013815D+04 Ahn10= .216166689D+00
 Ghne2= .139828484D+03 Ahne2= .936862048D+01
 Ghn20= .466094897D+02 Ahn20= .281058645D+02
 Gsel= .445246908D+03 Asel= .294218776D+01
 Gsel0= .148415620D+03 Asel0= .882656422D+01
 Gbur1= .543867398D+04 Abur1= .240867536D+00
 Gbul0= .181289113D+04 Abul0= .722602686D+00
 Gdan1= .595329373D+02 Adan1= .220046257D+02
 Gdal0= .198443103D+02 Adal0= .660138842D+02
 Gwl= .208582760D+05 Awl= .628048069D-01
 Gwl0= .695275793D+04 Awl0= .188414441D+00
 Giecl= .194768978D+05 Aiecl= .672591710D-01
 Giel0= .649229800D+04 Aiel0= .201777500D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

To=.36815E+03 Po=.34950E+05 T1=.36795E+03
 Vhne=.54524E+00 Ho=.95100E+02 H=.13238E+01
 Pc=.54152E+04 ETc=.15494E+00 ETs=.24662E+00
 Xo=-.720964800D-04
 X=.255023600D-06 P1=.32150E+05
 C=.98786E+00 AK=.27238E+05 V=.10204E-02

OMEGA=.784783600D+01
 Ghem1=.136835375D+04 Ahem1=.121313659D+01
 Ghe10=.456117867D+03 Ahe10=.363941016D+01
 Ghem2=.164224082D+05 Ahem2=.101081399D+00
 Ghe20=.547413549D+04 Ahe20=.303244230D+00
 Ghe30=.150388039D+04 Ahe30=.110381119D+01
 Ghne1=.170996398D+05 Ahne1=.970780683D-01
 Ghn10=.569987932D+04 Ahn10=.291234236D+00
 Ghne2=.195162845D+03 Ahne2=.850571737D+01
 Ghn20=.650542746D+02 Ahn20=.255171549D+02
 Gsel=.710489916D+03 Ase1=.233641599D+01
 Gsel0=.236829947D+03 Ase10=.700924872D+01
 Gbur1=.510053657D+04 Abur1=.325455955D+00
 Gbu10=.170017867D+04 Abu10=.976367970D+00
 Gdan1=.508296618D+02 Adan1=.326580965D+02
 Gdal0=.169432188D+02 Adal0=.979743001D+02
 Gw1=.211700218D+05 Aw1=.784127676D-01
 Gw10=.705667317D+04 Aw10=.235238328D+00
 Giecl=.200353530D+05 Aiecl=.828535440D-01
 Giel0=.667845000D+04 Aiel0=.248560700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

To=.36815E+03 Po=.34950E+05 T1=.36795E+03
 Vhne=.54524E+00 Ho=.95100E+02 H=.13238E+01
 Pc=.54152E+04 ETc=.15494E+00 ETs=.24662E+00
 Xo=-.720964800D-04
 X=.255023600D-06 P1=.32150E+05
 C=.98786E+00 AK=.27238E+05 V=.10204E-02

OMEGA=.784783600D+01
 Ghem1=.136835375D+04 Ahem1=.121313659D+01
 Ghe10=.456117867D+03 Ahe10=.363941016D+01
 Ghem2=.164224082D+05 Ahem2=.101081399D+00
 Ghe20=.547413549D+04 Ahe20=.303244230D+00
 Ghe30=.150388039D+04 Ahe30=.110381119D+01
 Ghne1=.170996398D+05 Ahne1=.970780683D-01
 Ghn10=.569987932D+04 Ahn10=.291234236D+00
 Ghne2=.195162845D+03 Ahne2=.850571737D+01
 Ghn20=.650542746D+02 Ahn20=.255171549D+02
 Gsel=.710489916D+03 Ase1=.233641599D+01
 Gsel0=.236829947D+03 Ase10=.700924872D+01
 Gbur1=.510053657D+04 Abur1=.325455955D+00
 Gbu10=.170017867D+04 Abu10=.976367970D+00
 Gdan1=.508296618D+02 Adan1=.326580965D+02
 Gdal0=.169432188D+02 Adal0=.979743001D+02
 Gw1=.211700218D+05 Aw1=.784127676D-01
 Gw10=.705667317D+04 Aw10=.235238328D+00
 Giecl=.200353530D+05 Aiecl=.828535440D-01
 Giel0=.667845000D+04 Aiel0=.248560700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT20.FOR

To=.35735E+03 Po=.23090E+05 T1=.35725E+03
 Vhne=.16040E+01 Ho=.84242E+02 H=.12854E+01
 Pc=.35378E+04 ETc=.15322E+00 ETs=.24740E+00
 Xo=-.412997100D-04
 X= .121749600D-06 P1=.10990E+05
 C=.98467E+00 AK=.41813E+05 V=.10131E-02
 OMEGA= .102674300D+02
 Ghem1= .966605324D+03 Ahem1= .244153424D+01
 Ghe10= .322201740D+03 Ahe10= .732460352D+01
 Ghem2= .134111757D+05 Ahem2= .175972640D+00
 Ghe20= .447039142D+04 Ahe20= .527917978D+00
 Ghe30= .107242837D+04 Ahe30= .220061316D+01
 Ghne1= .138715135D+05 Ahne1= .170132841D+00
 Ghn10= .462383732D+04 Ahn10= .510398579D+00
 Ghne2= .808490478D+02 Ahne2= .291902015D+02
 Ghn20= .269496797D+02 Ahn20= .875706141D+02
 Gsel= .337079597D+03 Ase1= .700131369D+01
 Gsel0= .112359854D+03 Ase10= .210039433D+02
 Gbur1= .417840607D+04 Abur1= .564808676D+00
 Gbu10= .139280187D+04 Abu10= .169442621D+01
 Gdan1= .300889076D+02 Adan1= .784342200D+02
 Gda10= .100296348D+02 Ada10= .235302685D+03
 Gw1= .225409130D+05 Aw1= .104698510D+00
 Gw10= .751363685D+04 Aw10= .314095564D+00
 Giec1= .213110407D+05 Aiec1= .110740720D+00
 Giel0= .710368000D+04 Aiel0= .332222200D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT21.FOR

To=.37945E+03 Po=.25550E+05 T1=.37925E+03
 Vhne=.78299E+00 Ho=.10646E+03 H=.13644E+01
 Pc=.85356E+04 ETc=.33407E+00 ETs=.52386E+00
 Xo=-.270153500D-04
 X= .288788400D-06 P1=.23550E+05
 C=.99202E+00 AK=.17716E+05 V=.10315E-02
 OMEGA= .221316400D+02
 Ghem1= .103587848D+04 Ahem1= .121635890D+01
 Ghe10= .345292788D+03 Ahe10= .364907709D+01
 Ghem2= .123980316D+05 Ahem2= .101629036D+00
 Ghe20= .413267676D+04 Ahe20= .304887141D+00
 Ghe30= .761659973D+03 Ahe30= .165428150D+01
 Ghne1= .126919462D+05 Ahne1= .992755550D-01
 Ghn10= .423064827D+04 Ahn10= .297826697D+00
 Ghne2= .829211365D+02 Ahne2= .151951608D+02
 Ghn20= .276403759D+02 Ahn20= .455854872D+02
 Gsel= .450059360D+03 Ase1= .279963070D+01
 Gsel0= .150019770D+03 Ase10= .839889301D+01
 Gbur1= .389085975D+04 Abur1= .323835882D+00
 Gbu10= .129695311D+04 Abu10= .971507751D+00
 Gdan1= .325340867D+02 Adan1= .387286114D+02
 Gda10= .108446944D+02 Ada10= .116185847D+03
 Gw1= .201855380D+05 Aw1= .624209274D-01
 Gw10= .672851193D+04 Aw10= .187262802D+00
 Giec1= .215202200D+05 Aiec1= .585495872D-01
 Giel0= .717340600D+04 Aiel0= .175648800D+00
 Stop - Program terminated.

B>FUR00
File name missing or blank - try again!
UNIT 3 ? DAT22.FOR
To=.38505E+03 Po=.34764E+05 T1=.37485E+03
Vhne=.16199E+01 Ho=.11212E+03 H=.13486E+01
Pc=.42417E+01 ETc=.12202E-03 ETs=.19244E-03
Xo=-.459328500D-04
X=.155502900D-04 P1=.11464E+05
C=.99065E+00 AK=.20690E+05 V=.10276E-02
OMEGA=.521017900D-02
Ghem1=.149536488D+04 Ahem1=.983037666D+00
Ghe10=.498454906D+03 Ahe10=.294911332D+01
Ghem2=.176279562D+05 Ahem2=.833902686D-01
Ghe20=.587598475D+04 Ahe20=.250170833D+00
Ghe30=.340538491D+03 Ahe30=.431669264D+01
Ghne1=.183064616D+05 Ahne1=.802995158D-01
Ghn10=.610215319D+04 Ahn10=.240898574D+00
Ghne2=.599974914D+03 Ahne2=.245010244D+01
Ghn20=.199991616D+03 Ahn20=.735030811D+01
Gsel=.446947534D+03 Asel=.328897664D+01
Gsel0=.148982495D+03 Asel0=.986693099D+01
Gbur1=.554160635D+04 Abur1=.265266045D+00
Gbul0=.184720192D+04 Abul0=.795798221D+00
Gdan1=.328053220D+03 Adan1=.448098025D+01
Gdal0=.109351062D+03 Adal0=.134429422D+02
Gwl=.905373046D+04 Awl=.162364012D+00
Gwl0=.301790983D+04 Awl0=.487092088D+00
Giecl=.787722659D+04 Aiecl=.186613903D+00
Giel0=.262574200D+04 Aiel0=.559841800D+00
Stop - Program terminated.

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UNIT 3 ? DAT00.FOR

To=.30605E+03 Po=.42990E+05 T1=.30575E+03
 Vhne=.44380E+00 Ho=.30000E+02 H=.11007E+01
 Pc=.49012E+03 ETc=.11401E-01 ETs=.11928E-01
 Xo=-.184180700D-03
 X=.340246100D-06 P1=.30090E+05
 C=.98251E+00 AK=.46995E+06 V=.98541E-03

ク) IECの式によるP

OMEGA=.252169000D+00
 Ghem1=.282382431D+04 Ahem1=.920737169D+00
 Ghe10=.941274668D+03 Ahe10=.276221181D+01
 Ghem2=.199523279D+05 Ahem2=.130310609D+00
 Ghe20=.665077524D+04 Ahe20=.390931870D+00
 Ghe30=.449319458D+04 Ahe30=.578652883D+00
 Ghne1=.217251483D+05 Ahne1=.119676974D+00
 Ghn10=.724171530D+04 Ahn10=.359030960D+00
 Ghne2=.755960274D+03 Ahne2=.343933417D+01
 Ghn20=.251986731D+03 Ahn20=.103180036D+02
 Gsel=.938834627D+03 Asel=.276939082D+01
 Gsel0=.312944842D+03 Ase10=.830817337D+01
 Gburl=.609959426D+04 Aburl=.426257861D+00
 Gbul0=.203319787D+04 Abul0=.127877372D+01
 Gdan1=.305871248D+03 Adan1=.850030860D+01
 Gdal0=.101957072D+03 Adal0=.255009286D+02
 Gwl=.103203801D+05 Awl=.251928706D+00
 Gwl0=.344012632D+04 Awl0=.755786200D+00
 Giecl=.897873088D+04 Aiecl=.289573219D+00
 Giel0=.299291000D+04 Aiel0=.868719800D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT01.FOR

To=.34645E+03 Po=.34490E+05 T1=.34472E+03
 Vhne=.11507E+01 Ho=.73000E+02 H=.12405E+01
 Pc=.34724E+04 ETc=.10068E+00 ETs=.10612E+00
 Xo=-.101855800D-03
 X=.263366900D-05 P1=.14590E+05
 C=.98164E+00 AK=.66715E+05 V=.10041E-02

OMEGA=.311986800D+01
 Ghem1=.213447940D+04 Ahem1=.946366592D+00
 Ghe10=.711493058D+03 Ahe10=.283910008D+01
 Ghem2=.168656514D+05 Ahem2=.119770055D+00
 Ghe20=.562188319D+04 Ahe20=.359310205D+00
 Ghe30=.236172986D+04 Ahe30=.855305272D+00
 Ghne1=.180329650D+05 Ahne1=.112017076D+00
 Ghn10=.601098767D+04 Ahn10=.336051263D+00
 Ghne2=.212231219D+03 Ahne2=.951792112D+01
 Ghn20=.707437319D+02 Ahn20=.285537665D+02
 Gsel=.500663409D+03 Asel=.403464676D+01
 Gsel0=.166887785D+03 Ase10=.121039416D+02
 Gburl=.522436796D+04 Aburl=.386649642D+00
 Gbul0=.174145580D+04 Abul0=.115994905D+01
 Gdan1=.257276693D+03 Adan1=.785146907D+01
 Gdal0=.857588885D+02 Adal0=.235544098D+02
 Gwl=.963823693D+04 Awl=.209581899D+00
 Gwl0=.321274530D+04 Awl0=.628745765D+00
 Giecl=.838526639D+04 Aiecl=.240898727D+00
 Giel0=.279508800D+04 Aiel0=.722696300D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT02.FOR

To=.33465E+03 Po=.44180E+05 T1=.33455E+03
 Vhne=.87809E+00 Ho=.61514E+02 H=.12040E+01
 Pc=.21182E+04 ETc=.47945E-01 ETs=.50404E-01
 Xo=-.160733700D-03
 X= .266152100D-07 P1=.18280E+05
 C=.97932E+00 AK=.11131E+06 V=.99771E-03
 OMEGA= .114980800D+01
 Ghem1= .274149319D+04 Ahem1= .561737672D+00
 Ghe10= .913830964D+03 Ahe10= .168521320D+01
 Ghem2= .198230254D+05 Ahem2= .776874351D-01
 Ghe20= .660767442D+04 Ahe20= .233062331D+00
 Ghe30= .445866599D+04 Ahe30= .345394789D+00
 Ghne1= .211636148D+05 Ahne1= .727663970D-01
 Ghn10= .705453752D+04 Ahn10= .218299215D+00
 Ghne2= .457023116D+03 Ahne2= .336963262D+01
 Ghn20= .152341022D+03 Ahn20= .101088990D+02
 Gsel= .667796174D+03 Ase1= .230609288D+01
 Gsel0= .222598701D+03 Ase10= .691827938D+01
 Gbur1= .606567498D+04 Abur1= .253887655D+00
 Gbu10= .202189144D+04 Abu10= .761663049D+00
 Gdan1= .411870658D+02 Adan1= .373903790D+02
 Gdal0= .137290205D+02 Adal0= .112171149D+03
 Gw1= .279680890D+05 Aw1= .550627539D-01
 Gw10= .932269532D+04 Aw10= .165188279D+00
 Giecl= .243322365D+05 Aiecl= .632905241D-01
 Giel0= .811074500D+04 Aiel0= .189871600D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT03.FOR

To=.38115E+03 Po=.46980E+05 T1=.38105E+03
 Vhne=.15755E+01 Ho=.10820E+03 H=.13709E+01
 Pc=.12262E+05 ETc=.26100E+00 ETs=.27804E+00
 Xo=-.964026100D-04
 X= .786743500D-07 P1=.11980E+05
 C=.99325E+00 AK=.16432E+05 V=.10332E-02
 OMEGA= .709566600D+01
 Ghem1= .263568893D+04 Ahem1= .515994124D+00
 Ghe10= .878562881D+03 Ahe10= .154798254D+01
 Ghem2= .176985040D+05 Ahem2= .768426529D-01
 Ghe20= .589950070D+04 Ahe20= .230527984D+00
 Ghe30= .182198493D+04 Ahe30= .746438667D+00
 Ghne1= .184709767D+05 Ahne1= .736290248D-01
 Ghn10= .615699156D+04 Ahn10= .220887098D+00
 Ghne2= .139968264D+03 Ahne2= .971648832D+01
 Ghn20= .466560829D+02 Ahn20= .291494681D+02
 Gsel= .453229635D+03 Ase1= .300068640D+01
 Gsel0= .151076529D+03 Ase10= .900206017D+01
 Gbur1= .550666301D+04 Abur1= .246973529D+00
 Gbu10= .183555414D+04 Abu10= .740920669D+00
 Gdan1= .298109394D+02 Adan1= .456208367D+02
 Gdal0= .993697874D+01 Adal0= .136862525D+03
 Gw1= .298445288D+05 Aw1= .455694914D-01
 Gw10= .994817520D+04 Aw10= .136708489D+00
 Giecl= .259647409D+05 Aiecl= .523787242D-01
 Giel0= .865491300D+04 Aiel0= .157136200D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT04.FOR

To=.39965E+03 Po=.49188E+05 T1=.37985E+03
 Vhne=.14138E+01 Ho=.12696E+03 H=.13665E+01
 Pc=.23065E+05 ETc=.46891E+00 ETs=.50385E+00
 Xo=-.633457600D-04
 X= .298025900D-04 P1=.13288E+05
 C=.99218E+00 AK=.17310E+05 V=.10321E-02
 OMEGA= .205565200D+02
 Ghem1= .210563667D+04 Ahem1= .251705342D+00
 Ghe10= .701878815D+03 Ahe10= .755116109D+00
 Ghem2= .151792185D+05 Ahem2= .349161586D-01
 Ghe20= .505973895D+04 Ahe20= .104748487D+00
 Ghe30= .114633353D+04 Ahe30= .462343625D+00
 Ghnel= .163444570D+05 Ahnel= .324268956D-01
 Ghn10= .544815174D+04 Ahn10= .972806972D-01
 Ghne2= .911607941D+02 Ahne2= .581390284D+01
 Ghn20= .303869281D+02 Ahn20= .174417104D+02
 Gsel= .416579609D+03 Ase1= .127226583D+01
 Gsel0= .138859855D+03 Ase10= .381679789D+01
 Gbur1= .475618443D+04 Abur1= .111433862D+00
 Gbu10= .158539464D+04 Abu10= .334301622D+00
 Gdan1= .473362494D+03 Adan1= .111964933D+01
 Gdal0= .157787481D+03 Adal0= .335894836D+01
 Gwl= .646883158D+04 Awl= .819313339D-01
 Gwl0= .215627696D+04 Awl0= .245794028D+00
 Giecl= .562788341D+04 Aiecl= .941739481D-01
 Giel0= .187596100D+04 Aiel0= .282521900D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT05.FOR

To=.41725E+03 Po=.49487E+05 T1=.38815E+03
 Vhne=.10334E+01 Ho=.14492E+03 H=.13963E+01
 Pc=.38112E+05 ETc=.77015E+00 ETs=.83522E+00
 Xo=-.208223700D-04
 X= .433606500D-04 P1=.18487E+05
 C=.99586E+00 AK=.12829E+05 V=.10399E-02
 OMEGA= .216242000D+02
 Ghem1= .263350144D+04 Ahem1= .284791946D+00
 Ghe10= .877833717D+03 Ahe10= .854375932D+00
 Ghem2= .104311377D+05 Ahem2= .719001152D-01
 Ghe20= .347704551D+04 Ahe20= .215700369D+00
 Ghe30= .111921957D+04 Ahe30= .670109800D+00
 Ghnel= .104015967D+05 Ahnel= .721043142D-01
 Ghn10= .346719854D+04 Ahn10= .216312966D+00
 Ghne2= .105482703D+03 Ahne2= .711017046D+01
 Ghn20= .351608973D+02 Ahn20= .213305137D+02
 Gsel= .333009334D+03 Ase1= .225218913D+01
 Gsel0= .111003099D+03 Ase10= .675656811D+01
 Gbur1= .314631919D+04 Abur1= .238373781D+00
 Gbu10= .104877295D+04 Abu10= .715121420D+00
 Gdan1= .421097794D+03 Adan1= .178105896D+01
 Gdal0= .140365916D+03 Adal0= .534317746D+01
 Gwl= .453706882D+04 Awl= .165304964D+00
 Gwl0= .151235611D+04 Awl0= .495914947D+00
 Giecl= .394724982D+04 Aiecl= .190005709D+00
 Giel0= .131575000D+04 Aiel0= .570017200D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT06.FOR

To=.33505E+03 Po=.49406E+05 T1=.33500E+03
Vhne=.14360E+01 Ho=.87700E+02 H=.12056E+01
Pc=.21088E+04 ETc=.42683E-01 ETs=.44872E-01

Xo=-.190939500D-03

X=-.513366000D-07 P1=.11406E+05

C=.97962E+00 AK=.10939E+06 V=.99798E-03

OMEGA= .909788600D+00

Ghem1= .306973032D+04 Ahem1= .270382058D+00

Ghe10= .102324333D+04 Ahe10= .811146260D+00

Ghem2= .210238725D+05 Ahem2= .394789305D-01

Ghe20= .700795673D+04 Ahe20= .118436804D+00

Ghe30= .533377729D+04 Ahe30= .155612047D+00

Ghne1= .225012028D+05 Ahne1= .368869170D-01

Ghn10= .750040012D+04 Ahn10= .110660763D+00

Ghne2= .425069485D+03 Ahne2= .195262193D+01

Ghn20= .141689813D+03 Ahn20= .585786643D+01

Gsel= .553871334D+03 Ase1= .149854298D+01

Gsel0= .184623758D+03 Ase10= .449562943D+01

Gbur1= .642073971D+04 Abur1= .129268595D+00

Gbu10= .214024634D+04 Abu10= .387805826D+00

Gdan1= .630521353D+02 Adan1= .131637096D+02

Gda10= .210173762D+02 Ada10= .394911331D+02

Gwl= .239276047D+05 Awl= .346879685D-01

Gwl0= .797586739D+04 Awl0= .104063917D+00

Giecl= .208170160D+05 Aiecl= .398712285D-01

Giel0= .693900400D+04 Aiel0= .119613700D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT07.FOR

To=.36075E+03 Po=.49707E+05 T1=.36065E+03
Vhne=.14202E+01 Ho=.87700E+02 H=.12976E+01
Pc=.61634E+04 ETc=.12399E+00 ETs=.13122E+00

Xo=-.147620200D-03

X= .382747400D-07 P1=.12507E+05

C=.98579E+00 AK=.36285E+05 V=.10157E-02

OMEGA= .288755600D+01

Ghem1= .293506986D+04 Ahem1= .243605786D+00

Ghe10= .978356516D+03 Ahe10= .730817436D+00

Ghem2= .199904801D+05 Ahem2= .357670250D-01

Ghe20= .666349264D+04 Ahe20= .107301086D+00

Ghe30= .296255056D+04 Ahe30= .241346092D+00

Ghne1= .211254613D+05 Ahne1= .338454148D-01

Ghn10= .704181967D+04 Ahn10= .101536255D+00

Ghne2= .237769124D+03 Ahne2= .300711879D+01

Ghn20= .792563659D+02 Ahn20= .902135736D+01

Gsel= .534565055D+03 Ase1= .133753599D+01

Gsel0= .178188332D+03 Ase10= .401260840D+01

Gbur1= .615867140D+04 Abur1= .116096469D+00

Gbu10= .205289024D+04 Abu10= .348289443D+00

Gdan1= .315272617D+02 Adan1= .226787853D+02

Gda10= .105090861D+02 Ada10= .680363634D+02

Gwl= .324569710D+05 Awl= .220291659D-01

Gwl0= .108189892D+05 Awl0= .660875049D-01

Giecl= .282375634D+05 Aiecl= .253208816D-01

Giel0= .941252100D+04 Aiel0= .759626500D-01

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT08.FOR

To=.38905E+03 Po=.48506E+05 T1=.37365E+03
 Vhne=.16230E+01 Ho=.12636E+03 H=.13443E+01
 Pc=.11932E+05 ETc=.24600E+00 ETs=.26199E+00
 Xo=-.863709000D-04
 X=.233164500D-04 P1=.11406E+05
 C=.99017E+00 AK=.21501E+05 V=.10265E-02
 OMEGA=.658820000D+01
 Ghem1=.269551341D+04 Ahem1=.254125985D+00
 Ghe10=.898504372D+03 Ahe10=.762378037D+00
 Ghem2=.179973093D+05 Ahem2=.380612451D-01
 Ghe20=.599910245D+04 Ahe20=.114183748D+00
 Ghe30=.197908709D+04 Ahe30=.346119180D+00
 Ghne1=.192194024D+05 Ahne1=.356410665D-01
 Ghn10=.640646679D+04 Ahn10=.106923211D+00
 Ghne2=.148431293D+03 Ahne2=.461492981D+01
 Ghn20=.494770924D+02 Ahn20=.138447909D+02
 Gsel=.458188525D+03 Asel=.149501780D+01
 Gsel0=.152729492D+03 Asel0=.448505388D+01
 Gburl=.564506591D+04 Aburl=.121344907D+00
 Gbul0=.188168843D+04 Abul0=.364034762D+00
 Gdan1=.533845443D+03 Adan1=.128314292D+01
 Gdal0=.177948462D+03 Adal0=.384942918D+01
 Gwl=.722978373D+04 Awl=.947469558D-01
 Gwl0=.240992765D+04 Awl0=.284240898D+00
 Giecl=.628991158D+04 Aiecl=.108904552D+00
 Giel0=.209663700D+04 Aiel0=.326713700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT09.FOR

To=.31265E+03 Po=.48010E+05 T1=.31215E+03
 Vhne=.13092E+01 Ho=.40100E+02 H=.11236E+01
 Pc=.69946E+03 ETc=.14569E-01 ETs=.15256E-01
 Xo=-.209153500D-03
 X=.632128300D-06 P1=.11510E+05
 C=.98044E+00 AK=.33645E+06 V=.98723E-03
 OMEGA=.301037300D+00
 Ghem1=.307993694D+04 Ahem1=.430528295D+00
 Ghe10=.102664554D+04 Ahe10=.129158503D+01
 Ghem2=.211247355D+05 Ahem2=.627700167D-01
 Ghe20=.704157774D+04 Ahe20=.188310070D+00
 Ghe30=.814398141D+04 Ahe30=.162819625D+00
 Ghne1=.228358294D+05 Ahne1=.580666451D-01
 Ghn10=.761194231D+04 Ahn10=.174199954D+00
 Ghne2=.780047866D+03 Ahne2=.169989568D+01
 Ghn20=.260015927D+03 Ahn20=.509968760D+01
 Gsel=.580261467D+03 Asel=.228517673D+01
 Gsel0=.193420468D+03 Asel0=.685553092D+01
 Gburl=.642264645D+04 Aburl=.206456951D+00
 Gbul0=.214088192D+04 Abul0=.619370919D+00
 Gdan1=.111366589D+03 Adan1=.119066231D+02
 Gdal0=.371221923D+02 Adal0=.357198732D+02
 Gwl=.180094553D+05 Awl=.736279903D-01
 Gwl0=.600315112D+04 Awl0=.220883995D+00
 Giecl=.156682259D+05 Aiecl=.846298748D-01
 Giel0=.522274100D+04 Aiel0=.253889700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT10.FOR

To=.35595E+03 Po=.47912E+05 T1=.35585E+03
 Vhne=.13758E+01 Ho=.82900E+02 H=.12804E+01
 Pc=.51141E+04 ETc=.10674E+00 ETs=.11280E+00
 Xo=-.150240400D-03

X=.357518700D-07 P1=.12712E+05
 C=.98402E+00 AK=.44090E+05 V=.10120E-02

OMEGA=.253894100D+01
 Ghem1=.285464161D+04 Ahem1=.331039805D+00
 Ghe10=.951547100D+03 Ahe10=.993119521D+00
 Ghem2=.198550211D+05 Ahem2=.475950136D-01
 Ghe20=.661833966D+04 Ahe20=.142785056D+00
 Ghe30=.310748775D+04 Ahe30=.304104175D+00
 Ghne1=.210374283D+05 Ahne1=.449199391D-01
 Ghn10=.701247535D+04 Ahn10=.134759832D+00
 Ghne2=.252933372D+03 Ahne2=.373616180D+01
 Ghn20=.843111147D+02 Ahn20=.112084866D+02
 Gsel=.538468997D+03 Ase1=.175497569D+01
 Gsel0=.179489646D+03 Ase10=.526492764D+01
 Gbur1=.610863577D+04 Abur1=.154699026D+00
 Gbul0=.203621170D+04 Abul0=.464097127D+00
 Gdan1=.243583225D+02 Adan1=.387957751D+02
 Gdal0=.811943994D+01 Adal0=.116387338D+03
 Gwl=.366255889D+05 Awl=.258016329D-01
 Gwl0=.122085283D+05 Awl0=.774049071D-01
 Giecl=.318642619D+05 Aiecl=.296570497D-01
 Giel0=.106214200D+05 Aiel0=.889711500D-01
 Stop - Program terminated.

FUR00

File name missing or blank - try again!

UNIT 3 ? DAT11.FOR

To=.38195E+03 Po=.51605E+05 T1=.37675E+03
 Vhne=.14899E+01 Ho=.10900E+02 H=.13554E+01
 Pc=.13160E+05 ETc=.25501E+00 ETs=.27189E+00
 Xo=-.598218200D-04

X=.794909900D-05 P1=.12505E+05
 C=.99124E+00 AK=.19406E+05 V=.10293E-02

OMEGA=.637247500D+01
 Ghem1=.290096038D+04 Ahem1=.245091248D+00
 Ghe10=.966986690D+03 Ahe10=.735273822D+00
 Ghem2=.185384059D+05 Ahem2=.383528122D-01
 Ghe20=.617946796D+04 Ahe20=.115058449D+00
 Ghe30=.203790949D+04 Ahe30=.348886936D+00
 Ghne1=.192517954D+05 Ahne1=.369316205D-01
 Ghn10=.641726443D+04 Ahn10=.110794873D+00
 Ghne2=.160267098D+03 Ahne2=.443634414D+01
 Ghn20=.534223601D+02 Ahn20=.133090339D+02
 Gsel=.489821716D+03 Ase1=.145154855D+01
 Gsel0=.163273888D+03 Ase10=.435464611D+01
 Gbur1=.583669107D+04 Abur1=.121815596D+00
 Gbul0=.194556348D+04 Abul0=.365446826D+00
 Gdan1=.374393353D+03 Adan1=.189907218D+01
 Gdal0=.124797771D+03 Adal0=.569721715D+01
 Gwl=.892620141D+04 Awl=.796531433D-01
 Gwl0=.297540015D+04 Awl0=.238959456D+00
 Giecl=.776579504D+04 Aiecl=.915553393D-01
 Giel0=.258859800D+04 Aiel0=.274666000D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT12.FOR

To=.40025E+03 Po=.49110E+05 T1=.37975E+03
 Vhne=.13694E+01 Ho=.12757E+03 H=.13662E+01
 Pc=.23482E+05 ETc=.47816E+00 ETs=.51394E+00
 Xo=-.620566600D-04
 X=.308434800D-04 P1=.13710E+05
 C=.99230E+00 AK=.17378E+05 V=.10320E-02
 OMEGA=.130814800D+02
 Ghem1=.267104348D+04 Ahem1=.221261842D+00
 Ghe10=.890347729D+03 Ahe10=.663785598D+00
 Ghem2=.149462763D+05 Ahem2=.395416214D-01
 Ghe20=.498209158D+04 Ahe20=.118624877D+00
 Ghe30=.144364510D+04 Ahe30=.409380394D+00
 Ghnel=.161619800D+05 Ahnel=.365673017D-01
 Ghn10=.538732610D+04 Ahn10=.109701917D+00
 Ghne2=.116128250D+03 Ahne2=.508920094D+01
 Ghn20=.387094125D+02 Ahn20=.152676045D+02
 Gsel=.419117966D+03 Asel=.141010419D+01
 Gsel0=.139705974D+03 Ase10=.423031302D+01
 Gburl=.472518585D+04 Aburl=.125074445D+00
 Gbul0=.157506178D+04 Abul0=.375223377D+00
 Gdan1=.685100029D+03 Adan1=.862647753D+00
 Gdal0=.228366652D+03 Adal0=.258794354D+01
 Gwl=.534202568D+04 Awl=.110632190D+00
 Gwl0=.178067504D+04 Awl0=.331896606D+00
 Giecl=.464756215D+04 Aiecl=.127163442D+00
 Giel0=.154918700D+04 Aiel0=.381490300D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT13.FOR

To=.32555E+03 Po=.40300E+05 T1=.32545E+03
 Vhne=.14043E+01 Ho=.52575E+02 H=.11713E+01
 Pc=.13493E+04 ETc=.33481E-01 ETs=.35133E-01
 Xo=-.150494700D-03
 X=.343802500D-07 P1=.11300E+05
 C=.97904E+00 AK=.17210E+06 V=.14043E+01
 OMEGA=.844259100D+00
 Ghem1=.255931349D+04 Ahem1=.102957297D+01
 Ghe10=.853104406D+03 Ahe10=.308871925D+01
 Ghem2=.508508828D+03 Ahem2=.518181761D+01
 Ghe20=.169502924D+03 Ahe20=.155454545D+02
 Ghe30=.132688075D+03 Ahe30=.198586045D+02
 Ghnel=.543481582D+03 Ahnel=.484837037D+01
 Ghn10=.181160508D+03 Ahn10=.145451127D+02
 Ghne2=.401190737D+03 Ahne2=.656794825D+01
 Ghn20=.133730231D+03 Ahn20=.197038469D+02
 Gsel=.508212247D+03 Asel=.518484160D+01
 Gsel0=.169404064D+03 Ase10=.155545265D+02
 Gburl=.584490646D+04 Aburl=.450819875D+00
 Gbul0=.194830194D+04 Abul0=.135245977D+01
 Gdan1=.132716760D+01 Adan1=.198543123D+04
 Gdal0=.442389151D+00 Adal0=.595629435D+04
 Gwl=.150133878D+06 Awl=.175510021D-01
 Gwl0=.500446204D+05 Awl0=.526530120D-01
 Giecl=.130616475D+06 Aiecl=.201735654D-01
 Giel0=.435388200D+05 Aiel0=.605207000D-01
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT14.FOR

To=.35595E+03 Po=.32450E+05 T1=.37235E+03
 Vhne=.55792E+00 Ho=.82828E+02 H=.12804E+01
 Pc=.51141E+04 ETc=.15760E+00 ETs=.16654E+00
 Xo=-.765942000D-04
 X=-.265609300D-04 P1=.30150E+05
 C=.98402E+00 AK=.44091E+05 V=.99279E-03
 OMEGA=.530433300D+01
 Ghem1=.198855612D+04 Ahem1=.809632670D+00
 Ghe10=.662851968D+03 Ahe10=.242889827D+01
 Ghem2=.168166863D+05 Ahem2=.957382432D-01
 Ghe20=.560556148D+04 Ahe20=.287214761D+00
 Ghe30=.175869305D+04 Ahe30=.915452528D+00
 Ghnel=.160662838D+05 Ahnel=.100209857D+00
 Ghn10=.535542735D+04 Ahn10=.300629604D+00
 Ghne2=.221149660D+03 Ahne2=.728013779D+01
 Ghn20=.737165455D+02 Ahn20=.218404157D+02
 Gsel=.685610923D+03 Ase1=.234827064D+01
 Gsel0=.228536950D+03 Ase10=.704481267D+01
 Gburl=.491560585D+04 Aburl=.327528295D+00
 Gbul0=.163853511D+04 Abul0=.982584990D+00
 Gdan1=.503308187D+03 Adan1=.319883531D+01
 Gdal0=.167769378D+03 Adal0=.959650696D+01
 Gwl=.648371784D+04 Awl=.248314322D+00
 Gwl0=.216123905D+04 Awl0=.744943046D+00
 Giecl=.564083467D+04 Aiecl=.285418754D+00
 Giel0=.188027800D+04 Aiel0=.856256300D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT15.FOR

To=.37235E+03 Po=.28650E+05 T1=.37225E+03
 Vhne=.68155E+00 Ho=.99300E+02 H=.13393E+01
 Pc=.93838E+04 ETc=.32753E+00 ETs=.34793E+00
 Xo=-.440170900D-04
 X=.120210100D-06 P1=.26350E+05
 C=.98945E+00 AK=.31874E+05 V=.10120E-02
 OMEGA=.123058500D+02
 Ghem1=.176768829D+04 Ahem1=.806137603D+00
 Ghe10=.589229366D+03 Ahe10=.241841307D+01
 Ghem2=.133206758D+05 Ahem2=.106976554D+00
 Ghe20=.444022479D+04 Ahe20=.320929698D+00
 Ghe30=.109175516D+04 Ahe30=.130523771D+01
 Ghnel=.137615652D+05 Ahnel=.103549268D+00
 Ghn10=.458718789D+04 Ahn10=.310647838D+00
 Ghne2=.126194606D+03 Ahne2=.112920833D+02
 Ghn20=.420648642D+02 Ahn20=.338762534D+02
 Gsel=.513315599D+03 Ase1=.277606993D+01
 Gsel0=.171105181D+03 Ase10=.832821069D+01
 Gburl=.413561226D+04 Aburl=.344568085D+00
 Gbul0=.137853727D+04 Abul0=.103370437D+01
 Gdan1=.278322108D+02 Adan1=.511996698D+02
 Gdal0=.927740258D+01 Adal0=.153599026D+03
 Gwl=.231969025D+05 Awl=.614306156D-01
 Gwl0=.773229999D+04 Awl0=.184291867D+00
 Giecl=.201813057D+05 Aiecl=.706099010D-01
 Giel0=.672710100D+04 Aiel0=.211829700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT16, .FOR

To=.31305E+03 Po=.51800E+05 T1=.38065E+03
Vhne=.12268E+01 Ho=.11010E+03 H=.13694E+01
Pc=.13651E+05 ETc=.26353E+00 ETs=.28109E+00

Xo=-.113834800D-03

X=-.115268800D-03 P1=.26350E+05

C=.99243E+00 AK=.16772E+05 V=.10253E-02

OMEGA= .561571900D+01

Ghem1= .311477154D+04 Ahem1= .513681333D+00

Ghe10= .103825707D+04 Ahe10= .154104417D+01

Ghem2= .213508654D+05 Ahem2= .749384146D-01

Ghe20= .711695435D+04 Ahe20= .224815268D+00

Ghe30= .191594020D+04 Ahe30= .835099135D+00

Ghne1= .182618876D+05 Ahne1= .876141632D-01

Ghn10= .608729521D+04 Ahn10= .262842518D+00

Ghne2= .171203197D+03 Ahne2= .934561985D+01

Ghn20= .570677263D+02 Ahn20= .280368626D+02

Gsel= .588396987D+03 Asel= .271925254D+01

Gsel0= .196132308D+03 Ase10= .815775850D+01

Gbur1= .575525895D+04 Abur1= .278006605D+00

Gbu10= .191841944D+04 Abu10= .834019904D+00

Gdan1= .938174137D+03 Adan1= .170544032D+01

Gda10= .312724679D+03 Ada10= .511632151D+01

Gw1= .556015898D+04 Aw1= .287761556D+00

Gw10= .185338613D+04 Aw10= .863284762D+00

Giecl= .483733849D+04 Aiecl= .330760397D+00

Gie10= .161244600D+04 Aie10= .992281300D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT17.FOR

To=.40505E+03 Po=.40471E+05 T1=.38175E+03
Vhne=.12838E+01 Ho=.13244E+03 H=.13734E+01
Pc=.27056E+05 ETc=.66852E+00 ETs=.72026E+00

Xo=-.241221900D-04

X= .349687400D-04 P1=.14671E+05

C=.99329E+00 AK=.16026E+05 V=.10328E-02

OMEGA= .220678400D+02

Ghem1= .221299251D+04 Ahem1= .501583261D+00

Ghe10= .737664091D+03 Ahe10= .150474995D+01

Ghem2= .111467173D+05 Ahem2= .995808870D-01

Ghe20= .371557205D+04 Ahe20= .298742693D+00

Ghe30= .999440678D+03 Ahe30= .111062119D+01

Ghne1= .113675263D+05 Ahne1= .976465745D-01

Ghn10= .378917501D+04 Ahn10= .292939755D+00

Ghne2= .841287205D+02 Ahne2= .131940673D+02

Ghn20= .280429038D+02 Ahn20= .395822062D+02

Gsel= .318568675D+03 Asel= .348433505D+01

Gsel0= .106189547D+03 Ase10= .104530063D+02

Gbur1= .343140701D+04 Abur1= .323482465D+00

Gbu10= .114380221D+04 Abu10= .970447500D+00

Gdan1= .371236081D+03 Adan1= .299001109D+01

Gda10= .123745347D+03 Ada10= .897003425D+01

Gw1= .527000706D+04 Aw1= .210625904D+00

Gw10= .175666883D+04 Aw10= .631877780D+00

Giecl= .458490585D+04 Aiecl= .242098755D+00

Gie10= .152830200D+04 Aie10= .726296400D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT18.FOR

To=.36667E+03 Po=.38759E+05 T1=.36645E+03
Vhne=.15818E+01 Ho=.93600E+02 H=.13184E+01
Pc=.76916E+04 ETc=.19845E+00 ETs=.21041E+00

Xo=-.882350500D-04

X= .262827700D-06 P1=.11459E+05

C=.98684E+00 AK=.28795E+05 V=.10338E-02

OMEGA= .584458300D+01

Ghem0= .271814122D+04 Ahem0= .566889458D+00

Ghem2= .167329663D+05 Ahem2= .782885696D-01

Ghe20= .557765484D+04 Ahe20= .234865734D+00

Ghe30= .182320525D+04 Ahe30= .718514825D+00

Ghne1= .175015650D+05 Ahne1= .748504493D-01

Ghn10= .583385436D+04 Ahn10= .224551372D+00

Ghne2= .139824644D+03 Ahne2= .936887776D+01

Ghn20= .466082097D+02 Ahn20= .281066363D+02

Gsel= .427847447D+03 Asel= .306183900D+01

Gsel0= .142615800D+03 Asel0= .918551799D+01

Gbur1= .522614004D+04 Abur1= .250663012D+00

Gbul0= .174204649D+04 Abul0= .751989116D+00

Gdan1= .595329373D+02 Adan1= .220046257D+02

Gdal0= .198443103D+02 Adal0= .660138842D+02

Gwl= .200431698D+05 Awl= .653589235D-01

Gwl0= .668105587D+04 Awl0= .196076792D+00

Giecl= .174375574D+05 Aiecl= .751252008D-01

Giel0= .581251900D+04 Aiel0= .225375600D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

To=.36815E+03 Po=.34950E+05 T1=.36795E+03
Vhne=.54524E+00 Ho=.95100E+02 H=.13238E+01
Pc=.81252E+04 ETc=.23248E+00 ETs=.24662E+00

Xo=-.720964800D-04

X= .255023600D-06 P1=.32150E+05

C=.98786E+00 AK=.27238E+05 V=.10204E-02

OMEGA= .784783600D+01

Ghem1= .205315669D+04 Ahem1= .808511112D+00

Ghe10= .684385490D+03 Ahe10= .242553360D+01

Ghem2= .156508364D+05 Ahem2= .106064619D+00

Ghe20= .521694491D+04 Ahe20= .318193891D+00

Ghe30= .150398991D+04 Ahe30= .110373081D+01

Ghne1= .163304123D+05 Ahne1= .101650832D+00

Ghn10= .544347019D+04 Ahn10= .304952529D+00

Ghne2= .195155334D+03 Ahne2= .850604475D+01

Ghn20= .650517708D+02 Ahn20= .255181370D+02

Gsel= .677109096D+03 Asel= .245159903D+01

Gsel0= .225703008D+03 Asel0= .735479787D+01

Gbur1= .486089831D+04 Abur1= .341500664D+00

Gbul0= .162029926D+04 Abul0= .102450210D+01

Gdan1= .508296618D+02 Adan1= .326580965D+02

Gdal0= .169432188D+02 Adal0= .979743001D+02

Gwl= .201753930D+05 Awl= .822784470D-01

Gwl0= .672513026D+04 Awl0= .246835368D+00

Giecl= .175525930D+05 Aiecl= .945729215D-01

Giel0= .585086400D+04 Aiel0= .283718800D+00

Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

To=.36815E+03 Po=.34950E+05 T1=.36795E+03
 Vhne=.54524E+00 Ho=.95100E+02 H=.13238E+01
 Pc=.81252E+04 ETc=.23248E+00 ETs=.24662E+00
 Xo=-.720964800D-04
 X=.255023600D-06 P1=.32150E+05
 C=.98786E+00 AK=.27238E+05 V=.10204E-02
 OMEGA=.784783600D+01
 Ghem1=.205315669D+04 Ahem1=.808511112D+00
 Ghe10=.684385490D+03 Ahe10=.242553360D+01
 Ghem2=.156508364D+05 Ahem2=.106064619D+00
 Ghe20=.521694491D+04 Ahe20=.318193891D+00
 Ghe30=.150398991D+04 Ahe30=.110373081D+01
 Ghne1=.163304123D+05 Ahne1=.101650832D+00
 Ghn10=.544347019D+04 Ahn10=.304952529D+00
 Ghne2=.195155334D+03 Ahne2=.850604475D+01
 Ghn20=.650517708D+02 Ahn20=.255181370D+02
 Gsel=.677109096D+03 Ase1=.245159903D+01
 Gsel0=.225703008D+03 Ase10=.735479787D+01
 Gburl=.486089831D+04 Aburl=.341500664D+00
 Gbul0=.162029926D+04 Abul0=.102450210D+01
 Gdan1=.508296618D+02 Adan1=.326580965D+02
 Gdal0=.169432188D+02 Adal0=.979743001D+02
 Gwl=.201753930D+05 Awl=.822784470D-01
 Gwl0=.672513026D+04 Awl0=.246835368D+00
 Giecl=.175525930D+05 Aiecl=.945729215D-01
 Giel0=.585086400D+04 Aiel0=.283718800D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT20.FOR

To=.35735E+03 Po=.23090E+05 T1=.35725E+03
 Vhne=.16040E+01 Ho=.84242E+02 H=.12854E+01
 Pc=.54034E+04 ETc=.23401E+00 ETs=.24740E+00
 Xo=-.412997100D-04
 X=.121749600D-06 P1=.10990E+05
 C=.98467E+00 AK=.41813E+05 V=.10131E-02
 OMEGA=.102674300D+02
 Ghem1=.147633557D+04 Ahem1=.159855256D+01
 Ghe10=.492111804D+03 Ahe10=.479565819D+01
 Ghem2=.127553114D+05 Ahem2=.185020963D+00
 Ghe20=.425177002D+04 Ahe20=.555062948D+00
 Ghe30=.107247102D+04 Ahe30=.220052567D+01
 Ghne1=.132174482D+05 Ahne1=.178551863D+00
 Ghn10=.440581560D+04 Ahn10=.535655646D+00
 Ghne2=.808483587D+02 Ahne2=.291904503D+02
 Ghn20=.269494500D+02 Ahn20=.875713605D+02
 Gsel=.320594959D+03 Ase1=.736131350D+01
 Gsel0=.106864975D+03 Ase10=.220839429D+02
 Gburl=.397406395D+04 Aburl=.593850534D+00
 Gbul0=.132468784D+04 Abul0=.178155179D+01
 Gdan1=.300889076D+02 Adan1=.784342200D+02
 Gdal0=.100296348D+02 Adal0=.235302685D+03
 Gwl=.214385644D+05 Awl=.110081998D+00
 Gwl0=.714618736D+04 Awl0=.330246029D+00
 Giecl=.186515509D+05 Aiecl=.126531033D+00
 Giel0=.621718300D+04 Aiel0=.379593100D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT21.FOR

To=.37945E+03 Po=.25550E+05 T1=.37925E+03
 Vhne=.78299E+00 Ho=.10646E+03 H=.13644E+01
 Pc=.12560E+05 ETc=.49160E+00 ETs=.52386E+00
 Xo=-.270153500D-04
 X=.288788400D-06 P1=.23550E+05
 C=.99202E+00 AK=.17716E+05 V=.10315E-02

OMEGA=.221316400D+02
 Ghem1=.152433099D+04 Ahem1=.826592131D+00
 Ghe10=.508110274D+03 Ahe10=.247977666D+01
 Ghem2=.108328326D+05 Ahem2=.116313069D+00
 Ghe20=.361094380D+04 Ahe20=.348939244D+00
 Ghe30=.761666482D+03 Ahe30=.165426736D+01
 Ghne1=.111359798D+05 Ahne1=.113146757D+00
 Ghn10=.371199288D+04 Ahn10=.339440306D+00
 Ghne2=.829210524D+02 Ahne2=.151951762D+02
 Ghn20=.276403478D+02 Ahn20=.455855335D+02
 Gsel=.393241296D+03 Asel=.320413958D+01
 Gsel0=.131080418D+03 Asel0=.961241978D+01
 Gbur1=.339965335D+04 Abur1=.370626023D+00
 Gbul0=.113321766D+04 Abul0=.111187819D+01
 Gdan1=.325340867D+02 Adan1=.387286114D+02
 Gdal0=.108446944D+02 Adal0=.116185847D+03
 Gwl=.176371896D+05 Awl=.714399534D-01
 Gwl0=.587906255D+04 Awl0=.214319883D+00
 Giecl=.153443544D+05 Aiecl=.821148919D-01
 Giel0=.511478400D+04 Aiel0=.246344700D+00
 Stop - Program terminated.

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT22.FOR

To=.38505E+03 Po=.34764E+05 T1=.37485E+03
 Vhne=.16199E+01 Ho=.11212E+03 H=.13486E+01
 Pc=.64192E+01 ETc=.18465E-03 ETs=.19244E-03
 Xo=-.459328500D-04
 X=.155502900D-04 P1=.11464E+05
 C=.99065E+00 AK=.20690E+05 V=.10276E-02

OMEGA=.521017900D-02
 Ghem1=.226298875D+04 Ahem1=.649583431D+00
 Ghe10=.754329503D+03 Ahe10=.194875050D+01
 Ghem2=.176274068D+05 Ahem2=.833928677D-01
 Ghe20=.587580162D+04 Ahe20=.250178630D+00
 Ghe30=.418923244D+03 Ahe30=.350899603D+01
 Ghne1=.183058947D+05 Ahne1=.803020026D-01
 Ghn10=.610196423D+04 Ahn10=.240906034D+00
 Ghne2=.741556414D+03 Ahne2=.198231715D+01
 Ghn20=.247185445D+03 Ahn20=.594695210D+01
 Gsel=.446933606D+03 Asel=.328907914D+01
 Gsel0=.148977852D+03 Asel0=.986723849D+01
 Gbur1=.554143265D+04 Abur1=.265274360D+00
 Gbul0=.184714402D+04 Abul0=.795823167D+00
 Gdan1=.328053220D+03 Adan1=.448098025D+01
 Gdal0=.109351062D+03 Adal0=.134429422D+02
 Gwl=.905344768D+04 Awl=.162369083D+00
 Gwl0=.301781557D+04 Awl0=.487107302D+00
 Giecl=.787649944D+04 Aiecl=.186631131D+00
 Giel0=.262550000D+04 Aiel0=.559893400D+00
 Stop - Program terminated.

B>TYPE FUR00.FOR

C
C
C
C

***** 2-PHASE CRITICAL FLOW MODEL *****

DOUBLE PRECISION Ghem1,Ahem1,Ghem2,Ahem2,Ghne1,Ahne1
DOUBLE PRECISION Ghne2,Ahne2,Gse1,Asel,Gburl,Aburl,Gdan1,Adan1
DOUBLE PRECISION Ghe10,Ahe10,Ghe20,Ahe20,Ghn10,Ahn10
DOUBLE PRECISION Ghn20,Ahn20,Gse10,Asel0,Gbul0,Abul0
DOUBLE PRECISION Gda10,Ada10,Gw1,Aw1,Gw10,Aw10,Giec1
DOUBLE PRECISION Aiec1,Giec10,Aiec10,Ghe30,Ahe30

C

DIMENSION Z(30)
OPEN (3,FILE=' ')
READ (3,*) (Z(I),I=1,23)
DO 230 I=1,23

230

CONTINUE
Po=Z(1)
To=Z(2)
Pl=Z(3)
Ps=Z(4)
Gm=Z(5)
Vo=Z(6)
VVo=Z(7)
VVf=Z(8)
VVg=Z(9)
Vfgo=Z(10)
Cfo=Z(11)
Hfgo=Z(12)
Ho=Z(13)
Hfg=Z(14)
Tl=Z(15)
Cf=Z(16)
AKg=Z(17)
AKf=Z(18)
Cg=Z(19)
V=Z(20)
Vfg=Z(21)
Vhne=Z(22)
H=Z(23)

C
C

```

C      WRITE(*,126) To,Po,T1
126    FORMAT(4H To=,E10.5,4X,3HPo=,E10.5,4X,3HT1=,E10.5)
      WRITE(*,124) Vhne,Ho,H
124    FORMAT(6H Vhne=,E10.5,4X,3HHo=,E10.5,4X,2HH=,E10.5)
      Ff=.96-.28*SQRT(Ps/2255600)
      Pc=Ff*Ps
C      Pc=Ps*(-.294*(75.48-.14*(T1-273.15))/49.2+1.)
      ETs=Ps/Po
      ETc=Pc/Po
      WRITE(*,127) Pc,ETc,ETs
127    FORMAT(4H Pc=,E10.5,4X,4HETc=,E10.5,4X,4HETs=,E10.5)
      VVfg=VVg-VVf
      Xo=(Vo-VVf)/(VVg-VVf)
      WRITE(*,80) Xo
80     FORMAT(4H Xo=,D15.9)
      ggc=9.80665
      Vfo=Vo-Xo*Vfgo
      Vgo=Vfgo+Vfo
      Cfg=ABS(Cg-Cf)
      XXX=Cf*T1*ALOG(To/T1)+(Xo*Hfgo*T1)/To
      XX=Hfg-Cfg*T1*ALOG(To/T1)
      X=XXX/XX
      WRITE(*,90) X,P1
90     FORMAT(3H X=,D15.9,4X,3HP1=,E10.5)
      C=Cf+X*Cfg
      AK=AKf+X*(AKg-AKf)
      Vf=ABS(V-X*Vfg)
      Vg=Vfg-Vf
      Vfhne=Vhne-Xo*Vfg
      Hfo=Ho-Xo*Hfgo
      Hgo=Hfgo+Hfo
      ROfo=1./Vfo
      WRITE(*,125) C,AK,V
125    FORMAT(3H C=,E10.5,4X,3HAK=,E10.5,4X,2HV=,E10.5)
C
C      HEM
C
      OMEGA=(Cfo*To*Ps*(Vfgo**2))/(Vfo*427.0*(Hfgo**2))
      WRITE(*,101) OMEGA
101    FORMAT(7H OMEGA=,D15.9)
      IF(Po*ROfo*ggc/(OMEGA*ETs)) 100,100,200
200    Gc=ETc*SQRT((Po*ROfo*ggc)/(OMEGA*ETs))
      F1=3.14159*.0024*.0254*3600.
      F10=3.14159*.0008*.0254*3600.
      Ghem1=Gc*F1
      Ghe10=Gc*F10
      Ahem1=Gm/Ghem1
      Ahe10=Gm/Ghe10
      GO TO 110
C

```

```

100 IF(Po*ggc/Vf) 21,400,400
400 IF(X*Vg/Vf+(1.-X)) 401,21,401
401 A=(SQRT((Po*ggc)/Vf))/((X*Vg)/Vf+(1.-X))
    B=2.*(1.-ETc)
    D=(2.*C*To)/(Po*Vf)
    E=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)
    F=(T1/To)*ALOG(T1/To)
    IF(B+D*(E+F)) 21,500,500
500 Gc=A*(SQRT(B+D*(E+F)))
    Ghem2=Gc*F1
    Ghe20=Gc*F10
    Ahem2=Gm/Ghem2
    Ahe20=Gm/Ghe20
    GO TO 120

C
21 OOO=SQRT(ABS((Po*ggc)/Vf))
    PPP=X*(Vg/Vf)/ETc**((1.+AK)/AK)
    QQQ=OMEGA*(1.-X*Hfg/(C*T1))
    Gc=OOO/SQRT(ABS((PPP+QQQ)))
    Ghe30=Gc*F10
    Ahe30=Gm/Ghe30
    GO TO 129

C
C
C HNE
290 IF(Vf) 31,600,31
31 G=SQRT((Po*ggc)/Vf)
    AAK=1./AK
    EETc=ETc**AAK
    O=1.+Xo*(Vgo/(Vfo*EETc)-1.)
    IF((1.-AK)-(1.-ETc)) 23,600,23
23 Q=2.*Xo*(((AK*Vgo/Vfo)-ETc**((ABS((AK-1.)/AK)))/(1.-AK)-(1.-ETc))
    IF((G+Q)/O) 600,700,700
    IF(O) 700,600,700
700 Gc=G*(SQRT((B+Q)/O))
    Ghne1=Gc*F1
    Ghn10=Gc*F10
    Ahne1=Gm/Ghne1
    Ahn10=Gm/Ghn10
    GO TO 130

C
600 P=SQRT((Po*ggc)/Vfhne)
    IF(X-.14) 1,2,2
    1 AN=7.*X
    2 AN=1.
    IF(Cg) 33,800,33
33 IF(((1.-Xo)*C*ETc)/Cg) 22,800,22
22 R=((Xo*Vg)/Vfhne)/(((1.-Xo)*C*ETc)/Cg)
    IF(C*T1) 32,800,32
32 S=AN*OMEGA*(1.-(X*Hfg)/(C*T1))
    Gc=P/(SQRT(ABS(R+S)))
    Ghne2=Gc*F1
    Ghn20=Gc*F10
    Ahne2=Gm/Ghne2
    Ahn20=Gm/Ghn20
    GO TO 140

```

```

C
C      SE
C
800    SS=(Vg/Vf)**(1./3.)
        IF(X+(1.-X)/SS**2) 11,12,12
12     TTT=((X*Vg)/Vf+(1.-X)*SS)*(SQRT(X+(1.-X)/SS**2))
        U=(2.*C*To)/(Po*Vf)
        W=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)+(T1/To)*ALOG(T1/To)
        IF(P+U*W) 11,13,13
13     IF(TTT) 29,11,29
29     Gc=(P*(SQRT(B+U*W)))/TTT
        Gsel=Gc*F1
        Gsel0=Gc*F10
        Asel=Gm/Gsel
        Asel0=Gm/Gsel0
        GO TO 150

C
C      Burnel***HNE***
C
        CC=.294*(75.48-.14*(T1-273.15))/49.2
11     CC=1.-Pc/Ps
        IF(2.*ROfo*(Po-(1.-CC)*Ps)) 14,15,15
15     Gc=SQRT(2.*ROfo*(Po-(1.-CC)*Ps))
        Gbur1=Gc*F1
        Gbul0=Gc*F10
        Abur1=Gm/Gbur1
        Abul0=Gm/Gbul0
        GO TO 160

C
C      D.M.Dancer***HEM***
C
14     AAAA=((4186.8*Hfgo)/To)/Vfgo
        VVVV=V/Vf
        TTTT=(T1-To)/To
        IF(1.-VVVV) 24,16,24
24     IF(AAAA*Vf) 34,16,34
34     AKK1=((4186.8*Cf*VVVV)/(Vf*AAAA)-(1.-VVVV)/TTTT)/(VVVV-1.)
        AKK2=(4186.8*Cf)/(Vf*AAAA)-AKK1
        IF(AKK1) 26,16,26
26     IF(AKK2) 28,16,28
28     AKKK=ABS(((AKK1+AKK2)/AKK2))
        TTc=(1./AKK1)*(1.-(AKKK**(1./3.)))
        IF(1.-AKK1*TTc) 27,16,27
27     Y=ABS(-TTc+.5*AKK1*(TTc**2))
        Gcc=((1.+AKK2*TTc)*SQRT(Y))/(1.-AKK1*TTc)
        IF((2.*AAAA*To)/Vf) 16,17,17
17     Gc=Gcc*SQRT(ABS((2.*AAAA*To)/Vf))
        Gdan1=Gc*F1
        Gdal0=Gc*F10
        Adan1=Gm/Gdan1
        Adal0=Gm/Gdal0
        GO TO 170

```

```

C
C      G.F.BROCKETT & C.F.KING
C
183    ROo=ROfo/gc
        Gc=50.4*SQRT(ABS(ROo*(1.-ETc)*Po))
        Gw1=Gc*F1
        Gw10=Gc*F10
        Aw1=Gm/Gw1
        Aw10=Gm/Gw10
        GO TO 180

C
C      IEC
C
193    FL=.87
        Gc=50.4*FL*SQRT(ABS((Po-Ff*Ps)*ROo))
        Giecl=Gc*F1
        Gie10=Gc*F10
        Aiecl=Gm/Giecl
        Aie10=Gm/Gie10
        GO TO 190

C

```

```
C
110 WRITE(*,10) Ghem1,Ahem1
10  FORMAT(7H Ghem1=,D15.9,5X,6HAhem1=,D15.9)
    WRITE(*,113) Ghe10,Ahe10
113  FORMAT(7H Ghe10=,D15.9,5X,6HAhe10=,D15.9)
    GO TO 100
120  WRITE(*,20) Ghem2,Ahem2
20   FORMAT(7H Ghem2=,D15.9,5X,6HAhem2=,D15.9)
    WRITE(*,114) Ghe20,Ahe20
114  FORMAT(7H Ghe20=,D15.9,5X,6HAhe20=,D15.9)
    GO TO 21
129  WRITE(*,128) Ghe30,Ahe30
128  FORMAT(7H Ghe30=,D15.9,5X,6HAhe30=,D15.9)
    GO TO 290
130  WRITE(*,30) Ghne1,Ahne1
30   FORMAT(7H Ghne1=,D15.9,5X,6HAhne1=,D15.9)
    WRITE(*,115) Ghn10,Ahn10
115  FORMAT(7H Ghn10=,D15.9,5X,6HAhn10=,D15.9)
    GO TO 600
140  WRITE(*,40) Ghne2,Ahne2
40   FORMAT(7H Ghne2=,D15.9,5X,6HAhne2=,D15.9)
    WRITE(*,119) Ghn20,Ahn20
119  FORMAT(7H Ghn20=,D15.9,5X,6HAhn20=,D15.9)
    GO TO 800
150  WRITE(*,50) Gsel,Asel
50   FORMAT(6H Gsel=,D15.9,6X,5HAsel=,D15.9)
    WRITE(*,121) Gsel0,Asel0
121  FORMAT(7H Gsel0=,D15.9,5X,6HAsel0=,D15.9)
    GO TO 11
160  WRITE(*,60) Gbur1,Abur1
60   FORMAT(7H Gbur1=,D15.9,5X,6HAbur1=,D15.9)
    WRITE(*,117) Gbu10,Abu10
117  FORMAT(7H Gbu10=,D15.9,5X,6HAbu10=,D15.9)
    GO TO 14
170  WRITE(*,70) Gdan1,Adan1
70   FORMAT(7H Gdan1=,D15.9,5X,6HAdan1=,D15.9)
    WRITE(*,118) Gda10,Ada10
118  FORMAT(7H Gda10=,D15.9,5X,6HAda10=,D15.9)
    GO TO 183
180  WRITE(*,181) Gw1,Aw1
181  FORMAT(5H Gw1=,D15.9,5X,4HAW1=,D15.9)
    WRITE(*,182) Gw10,Aw10
182  FORMAT(6H Gw10=,D15.9,5X,5HAW10=,D15.9)
    GO TO 193
190  WRITE(*,191) Giec1,Aiec1
191  FORMAT(7H Giec1=,D15.9,5X,6HAiec1=,D15.9)
    WRITE(*,192) Giel0,Aiel0
192  FORMAT(7H Giel0=,D15.9,5X,6HAiel0=,D15.9)
16   STOP
    END
```


*)

B>TYPE FUR00.FOR

```

C
C      ***** 2-PHASE CRITICAL FLOW MODEL *****
C
C      DOUBLE PRECISION Ghem1,Ahem1,Ghem2,Ahem2,Ghnel,Ahnel
C      DOUBLE PRECISION Ghne2,Ahne2,Gsel,Asel,Gbur1,Abur1,Gdan1,Adan1
C      DOUBLE PRECISION Ghe10,Ahe10,Ghe20,Ahe20,Ghn10,Ahn10
C      DOUBLE PRECISION Ghn20,Ahn20,Gsel0,Asel0,Gbul0,Abul0
C      DOUBLE PRECISION Gda10,Ada10,Gwl,Awl,Gwl0,Awl0,Giecl
C      DOUBLE PRECISION Aiecl,Giecl0,Aiecl0,Ghe30,Ahe30
C
C      DIMENSION Z(30)
C      OPEN (3,FILE=' ')
C      READ (3,*) (Z(I),I=1,23)
230 DO 230 I=1,23
C      CONTINUE
C      Po=Z(1)
C      To=Z(2)
C      Pl=Z(3)
C      Ps=Z(4)
C      Gm=Z(5)
C      V0=Z(6)
C      VVo=Z(7)
C      VVf=Z(8)
C      VVg=Z(9)
C      Vfgo=Z(10)
C      Cfo=Z(11)
C      Hfgo=Z(12)
C      Ho=Z(13)
C      Hfg=Z(14)
C      Tl=Z(15)
C      Cf=Z(16)
C      AKg=Z(17)
C      AKf=Z(18)
C      Cg=Z(19)
C      V=Z(20)
C      Vfg=Z(21)
C      Vhne=Z(22)
C      H=Z(23)

```

C

```
117    FORMAT(7H Gbu10=,D15.9,5X,6HAbu10=,D15.9)
      GO TO 14
170    WRITE(*,70) Gdan1,Adan1
70     FORMAT(7H Gdan1=,D15.9,5X,6HAdan1=,D15.9)
      WRITE(*,118) Gda10,Ada10
118    FORMAT(7H Gda10=,D15.9,5X,6HAda10=,D15.9)
      GO TO 183
180    WRITE(*,181) Gw1,Aw1
181    FORMAT(5H Gw1=,D15.9,5X,4HAw1=,D15.9)
      WRITE(*,182) Gw10,Aw10
182    FORMAT(6H Gw10=,D15.9,5X,5HAw10=,D15.9)
      GO TO 193
190    WRITE(*,191) Giec1,Aiec1
191    FORMAT(7H Giec1=,D15.9,5X,6HAiec1=,D15.9)
      WRITE(*,192) Gie10,Aie10
192    FORMAT(7H Gie10=,D15.9,5X,6HAie10=,D15.9)
16     STOP
      END
```

```

126 WRITE(*,126) To,Po,T1
    FORMAT(4H To=,E10.5,4X,3HPo=,E10.5,4X,3HT1=,E10.5)
124 WRITE(*,124) Vhne,Ho,H
    FORMAT(6H Vhne=,E10.5,4X,3HHo=,E10.5,4X,2HH=,E10.5)
C Ff=.96-.28*SQRT(Ps/2255600)
C Pc=Ff*Ps
    Pc=Ps*(-.294*(75.48-.14*(T1-273.15))/49.2+1.)
    ETs=Ps/Po
    ETc=Pc/Po
127 WRITE(*,127) Pc,ETc,ETs
    FORMAT(4H Pc=,E10.5,4X,4HETc=,E10.5,4X,4HETs=,E10.5)
    VVfg=VVg-VVf
    Xo=(Vo-VVf)/(VVg-VVf)
80 WRITE(*,80) Xo
    FORMAT(4H Xo=,D15.9)
    ggc=9.80665
    Vfo=Vo-Xo*Vfgo
    Vgo=Vfgo+Vfo
    Cfg=ABS(Cg-Cf)
    XXX=Cf*T1*ALOG(To/T1)+(Xo*Hfgo*T1)/To
    XX=Hfg-Cfg*T1*ALOG(To/T1)
    X=XXX/XX
90 WRITE(*,90) X,P1
    FORMAT(3H X=,D15.9,4X,3HP1=,E10.5)
    C=Cf+X*Cfg
    AK=AKf+X*(AKg-AKf)
    Vf=ABS(V-X*Vfg)
    Vg=Vfg-Vf
    Vfhne=Vhne-Xo*Vfg
    Hfo=Ho-Xo*Hfgo
    Hgo=Hfgo+Hfo
    ROfo=1./Vfo
    WRITE(*,125) C,AK,V
125 FORMAT(3H C=,E10.5,4X,3HAK=,E10.5,4X,2HV=,E10.5)
C
C HEM
C
    OMEGA=(Cfo*To*Ps*(Vfgo**2))/(Vfo*427.0*(Hfgo**2))
    WRITE(*,101) OMEGA
101 FORMAT(7H OMEGA=,D15.9)
    IF(Po*ROfo*ggc/(OMEGA*ETs)) 100,100,200
200 Gc=ETc*SQRT((Po*ROfo*ggc)/(OMEGA*ETs))
    F1=3.14159*.0024*.0254*3600.
    F10=3.14159*.0008*.0254*3600.
    Ghem1=Gc*F1
    Ghel0=Gc*F10
    Ahem1=Gm/Ghem1
    Ahel0=Gm/Ghel0
    GO TO 110
C

```

```

100 IF(Po*ggc/Vf) 21,400,400
400 IF(X*Vg/Vf+(1.-X)) 401,21,401
401 A=(SQRT((Po*ggc)/Vf))/((X*Vg)/Vf+(1.-X))
    B=2.*(1.-ETc)
    D=(2.*C*To)/(Po*Vf)
    E=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)
    F=(T1/To)*ALOG(T1/To)
    IF(B+D*(E+F)) 21,500,500
500 Gc=A*(SQRT(B+D*(E+F)))
    Ghem2=Gc*F1
    Ghe20=Gc*F10
    Ahem2=Gm/Ghem2
    Ahe20=Gm/Ghe20
    GO TO 120

C
21 OOO=SQRT(ABS((Po*ggc)/Vf))
    PPP=X*(Vg/Vf)/ETc**((1.+AK)/AK)
    QQQ=OMEGA*(1.-X*Hfg/(C*T1))
    Gc=OOO/SQRT(ABS((PPP+QQQ)))
    Ghe30=Gc*F10
    Ahe30=Gm/Ghe30
    GO TO 129

C
C HNE
C
290 IF(Vf) 31,600,31
31 G=SQRT((Po*ggc)/Vf)
    AAK=1./AK
    EETc=ETc**AAK
    O=1.+Xo*(Vgo/(Vfo*EETc))-1.
    IF((1.-AK)-(1.-ETc)) 23,600,23
23 Q=2.*Xo*((AK*Vgo/Vfo)-ETc**((ABS((AK-1.)/AK)))/(1.-AK)-(1.-ETc))
    IF((G+Q)/O) 600,700,700
    IF(O) 700,600,700
700 Gc=G*(SQRT((B+Q)/O))
    Ghne1=Gc*F1
    Ghn10=Gc*F10
    Ahne1=Gm/Ghne1
    Ahn10=Gm/Ghn10
    GO TO 130

C
600 P=SQRT((Po*ggc)/Vfhne)
    IF(X-.14) 1,2,2
1 AN=7.*X
2 AN=1.
    IF(Cg) 33,800,33
33 IF(((1.-Xo)*C*ETc)/Cg) 22,800,22
22 R=((Xo*Vg)/Vfhne)/(((1.-Xo)*C*ETc)/Cg)
    IF(C*T1) 32,800,32
32 S=AN*OMEGA*(1.-(X*Hfg)/(C*T1))
    Gc=P/(SQRT(ABS(R+S)))
    Ghne2=Gc*F1
    Ghn20=Gc*F10
    Ahne2=Gm/Ghne2
    Ahn20=Gm/Ghn20
    GO TO 140

C

```

C SE

C

```

800 SS=(Vg/Vf)**(1./3.)
    IF(X+(1.-X)/SS**2) 11,12,12
12 TTT=((X*Vg)/Vf+(1.-X)*SS)*(SQRT(X+(1.-X)/SS**2))
    U=(2.*C*To)/(Po*Vf)
    W=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)+(T1/To)*ALOG(T1/To)
    IF(P+U*W) 11,13,13
13 IF(TTT) 29,11,29
29 Gc=(P*(SQRT(B+U*W)))/TTT
    Gsel=Gc*F1
    Gsel0=Gc*F10
    Ase1=Gm/Gsel
    Ase10=Gm/Gsel0
    GO TO 150

```

C

C

C

```

Burnel***HNE***
C CC=.294*(75.48-.14*(T1-273.15))/49.2
11 CC=1.-Pc/Ps
    IF(2.*ROfo*(Po-(1.-CC)*Ps)) 14,15,15
15 Gc=SQRT(2.*ROfo*(Po-(1.-CC)*Ps))
    Gbur1=Gc*F1
    Gbul0=Gc*F10
    Abur1=Gm/Gbur1
    Abul0=Gm/Gbul0
    GO TO 160

```

C

C

C

```

D.M.Dancer***HEM***
14 AAAA=((4186.8*Hfgo)/To)/Vfgo
    VVVV=V/Vf
    TTTT=(T1-To)/To
    IF(1.-VVVV) 24,16,24
24 IF(AAAA*Vf) 34,16,34
34 AKK1=((4186.8*Cf*VVVV)/(Vf*AAAA)-(1.-VVVV)/TTTT)/(VVVV-1.)
    AKK2=(4186.8*Cf)/(Vf*AAAA)-AKK1
    IF(AKK1) 26,16,26
26 IF(AKK2) 28,16,28
28 AKKK=ABS(((AKK1+AKK2)/AKK2))
    TTc=(1./AKK1)*(1.-(AKKK*(1./3.)))
    IF(1.-AKK1*TTc) 27,16,27
27 Y=ABS(-TTc+.5*AKK1*(TTc**2))
    Gcc=((1.+AKK2*TTc)*SQRT(Y))/(1.-AKK1*TTc)
    IF((2.*AAAA*To)/Vf) 16,17,17
17 Gc=Gcc*SQRT(ABS((2.*AAAA*To)/Vf))
    Gdan1=Gc*F1
    Gdal0=Gc*F10
    Adan1=Gm/Gdan1
    Adal0=Gm/Gdal0
    GO TO 170

```

C

```

C      G.F.BROCKETT & C.F.KING
C
183    ROo=ROfo/gc
      Gc=50.4*SQRT(ABS(ROo*(1.-ETc)*Po))
      Gw1=Gc*F1
      Gw10=Gc*F10
      Aw1=Gm/Gw1
      Aw10=Gm/Gw10
      GO TO 180

C
C      IEC
C
193    FL=.87
      Gc=50.4*FL*SQRT(ABS((Po-Ff*Ps)*ROo))
      Giecl=Gc*F1
      Gie10=Gc*F10
      Aiecl=Gm/Giecl
      Aie10=Gm/Gie10
      GO TO 190

C
C
110    WRITE(*,10) Ghem1,Ahem1
10     FORMAT(7H Ghem1=,D15.9,5X,6HAhem1=,D15.9)
      WRITE(*,113) Ghe10,Ahe10
113    FORMAT(7H Ghe10=,D15.9,5X,6HAhe10=,D15.9)
      GO TO 100
120    WRITE(*,20) Ghem2,Ahem2
20     FORMAT(7H Ghem2=,D15.9,5X,6HAhem2=,D15.9)
      WRITE(*,114) Ghe20,Ahe20
114    FORMAT(7H Ghe20=,D15.9,5X,6HAhe20=,D15.9)
      GO TO 21
129    WRITE(*,128) Ghe30,Ahe30
128    FORMAT(7H Ghe30=,D15.9,5X,6HAhe30=,D15.9)
      GO TO 290
130    WRITE(*,30) Ghnel,Ahnel
30     FORMAT(7H Ghnel=,D15.9,5X,6HAhnel=,D15.9)
      WRITE(*,115) Ghn10,Ahn10
115    FORMAT(7H Ghn10=,D15.9,5X,6HAhn10=,D15.9)
      GO TO 600
140    WRITE(*,40) Ghne2,Ahne2
40     FORMAT(7H Ghne2=,D15.9,5X,6HAhne2=,D15.9)
      WRITE(*,119) Ghn20,Ahn20
119    FORMAT(7H Ghn20=,D15.9,5X,6HAhn20=,D15.9)
      GO TO 800
150    WRITE(*,50) Gsel,Asel
50     FORMAT(6H Gsel=,D15.9,6X,5HAsel=,D15.9)
      WRITE(*,121) Gsel0,Asel0
121    FORMAT(7H Gsel0=,D15.9,5X,6HAsel0=,D15.9)
      GO TO 11
160    WRITE(*,60) Gbur1,Abur1
60     FORMAT(7H Gbur1=,D15.9,5X,6HAbur1=,D15.9)
      WRITE(*,117) Gbu10,Abu10

```

部分領域[II]の物性値

File name missing or blank - try again!

UNIT 3 ? dat00.for

Xo=-.184180700D-03

X= .340246200D-06

OMEGA= .252169000D+00

Ghem1= .282382431D+04

Ghe10= .941274668D+03

Ghem2= .944861259D+03

Ghe20= .314953719D+03

Ghne1= .101863665D+04

Ghn10= .339545512D+03

Ghne2= .144977022D+04

Ghn20= .483256686D+03

Gse1= .939283201D+03

Gse10= .313094367D+03

Gbur1= .611354534D+04

Gbu10= .203784823D+04

AKK1= .255263100D+05

TTc= .380619100D-04

Gdan1= .142644763D+02

Gda10= .475482490D+01

Gwl= .477900095D+04

Gwl0= .159300015D+04

Giecl= .415773059D+04

Gie10= .138591000D+04

Stop - Program terminated.

Ahem1= .920737169D+00

Ahe10= .276221181D+01

Ahem2= .275172675D+01

Ahe20= .825518114D+01

Ahne1= .255243124D+01

Ahn10= .765729454D+01

Ahne2= .179338765D+01

Ahn20= .538016353D+01

Ase1= .276806824D+01

Ase10= .830420563D+01

Abur1= .425285142D+00

Abu10= .127585557D+01

AKK2=-.255257200D+05

AAAA= .158329000D+05

Adan1= .182270975D+03

Ada10= .546812985D+03

Aw1= .544046763D+00

Aw10= .163214047D+01

Aiecl= .625341143D+00

Aie10= .187602400D+01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat01.for

Xo=-.101855800D-03

X= .263367300D-05

OMEGA= .311986800D+01

Ghem1= .213447940D+04

Ghe10= .711493058D+03

Ghem2= .501294990D+03

Ghe20= .167098312D+03

Ghne1= .529372367D+03

Ghn10= .176457437D+03

Ghne2= .212139863D+03

Ghn20= .707132800D+02

Gse1= .501187811D+03

Gse10= .167062586D+03

Gbur1= .532810423D+04

Gbu10= .177603455D+04

AKK1= .288065400D+05

TTc= .339442600D-04

Gdan1= .751114734D+01

Gda10= .250371551D+01

Gwl= .564085150D+04

Gwl0= .188028363D+04

Giecl= .490754094D+04

Gie10= .163584700D+04

Stop - Program terminated.

Ahem1= .946366592D+00

Ahe10= .283910008D+01

Ahem2= .402956352D+01

Ahe20= .120886919D+02

Ahne1= .381583952D+01

Ahn10= .114475198D+02

Ahne2= .952201992D+01

Ahn20= .285660629D+02

Ase1= .403042523D+01

Ase10= .120912770D+02

Abur1= .379121712D+00

Abu10= .113736526D+01

AKK2=-.288062300D+05

AAAA= .113507900D+05

Adan1= .268933614D+03

Ada10= .806800930D+03

Aw1= .358101964D+00

Aw10= .107430601D+01

Aiecl= .411611442D+00

Aie10= .123483400D+01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat02.for

Xo=-.160733700D-03

X= .266152100D-07

OMEGA= .114980800D+01

Ghem1= .274149319D+04

Ghe10= .913830964D+03

Ghem2= .668262001D+03

Ghe20= .222753976D+03

Ghnel= .713313241D+03

Ghn10= .237771055D+03

Ghne2= .453661713D+03

Ghn20= .151220555D+03

Gsel= .667806400D+03

Gsel0= .222602109D+03

Gbur1= .612175467D+04

Gbul0= .204058467D+04

AKK1= .132120100D+07

TTc= .751913300D-06

Gdan1= .142389494D+01

Gdal0= .474631595D+00

Gwl= .150419524D+05

Gwl0= .501398360D+04

Giecl= .130864989D+05

Giel0= .436216600D+04

Stop - Program terminated.

Ahem1= .561737672D+00

Ahe10= .168521320D+01

Ahem2= .230448536D+01

Ahe20= .691345683D+01

Ahnel= .215893932D+01

Ahn10= .647681865D+01

Ahne2= .339459989D+01

Ahn20= .101838008D+02

Asel= .230605756D+01

Ase10= .691817344D+01

Abur1= .251561862D+00

Abul0= .754685666D+00

AKK2=-.132120000D+07

AAAA= .147863200D+05

Adan1= .108154047D+04

Ada10= .324462176D+04

Aw1= .102380326D+00

Aw10= .307141013D+00

Aiecl= .117678534D+00

Aie10= .353035600D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat03.for

Xo=-.964026100D-04

X= .786743500D-07

OMEGA= .709566600D+01

Ghem1= .263568893D+04

Ghe10= .878562881D+03

Ghem2= .453256482D+03

Ghe20= .151085478D+03

Ghnel= .472987055D+03

Ghn10= .157662335D+03

Ghne2= .139964761D+03

Ghn20= .466549151D+02

Ahem1= .515994124D+00

Ahe10= .154798254D+01

Ahem2= .300050866D+01

Ahe20= .900152696D+01

Ahnel= .287534296D+01

Ahn10= .862602982D+01

Ahne2= .971673151D+01

Ahn20= .291501977D+02

? Error: LN of non-positive argument

Error Code 2105

PC = 17E3: 00B3; SS = 187E, FP = E804, SP = E806

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat04.for

Xo=-.633457600D-04

X= .298030400D-04

OMEGA= .205565200D+02

Ghem1= .210563667D+04

Ghe10= .701878815D+03

Ghem2= .415060011D+03

Ghe20= .138353322D+03

Ghne1= .432244148D+03

Ghn10= .144081367D+03

Ghne2= .911604785D+02

Ghn20= .303868229D+02

Gse1= .415044947D+03

Gse10= .138348301D+03

Gbur1= .537559990D+04

Gbu10= .179186644D+04

AKK1= .893591300D+04

TTc= .108403500D-03

Gdan1= .126954450D+02

Gda10= .423181453D+01

Gw1= .395001499D+04

Gw10= .131667152D+04

Giecl= .343651319D+04

Gie10= .114550400D+04

Stop - Program terminated.

Ahem1= .251705342D+00

Ahe10= .755116109D+00

Ahem2= .127692378D+01

Ahe20= .383077177D+01

Ahnel= .122615888D+01

Ahn10= .367847704D+01

Ahne2= .581392297D+01

Ahn20= .174417708D+02

Asel= .127697013D+01

Ase10= .383091081D+01

Abur1= .985936471D-01

Abu10= .295780973D+00

AKK2=-.893563900D+04

AAAA= .107088600D+05

Adan1= .417472567D+02

Ada10= .125241784D+03

Aw1= .134176706D+00

Aw10= .402530161D+00

Aiecl= .154226092D+00

Aie10= .462678300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat05.for

Xo=-.208223700D-04

X= .433615800D-04

OMEGA= .216242000D+02

Ghem1= .263350144D+04

Ghe10= .877833717D+03

Ghem2= .320370588D+03

Ghe20= .106790184D+03

Ghne1= .326555525D+03

Ghn10= .108851830D+03

Ghne2= .105482651D+03

Ghn20= .351608797D+02

Ahem1= .284791946D+00

Ahe10= .854375932D+00

Ahem2= .234103887D+01

Ahe20= .702311738D+01

Ahnel= .229669977D+01

Ahn10= .689010006D+01

Ahne2= .711017400D+01

Ahn20= .213305243D+02

? Error: LN of non-positive argument

Error Code 2105

PC = 17E3: 00B3; SS = 187E, FP = E804, SP = E806

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat06.for

Xo=-.190939500D-03

X=-.513366000D-07

OMEGA= .909788600D+00

Ghem1= .306973032D+04

Ghe10= .102324333D+04

Ghem2= .554129664D+03

Ghe20= .184709868D+03

Ghne1= .593295156D+03

Ghn10= .197765031D+03

Ghne2= .421653463D+03

Ghn20= .140551139D+03

Gsel= .553855176D+03

Gsel0= .184618372D+03

Gbur1= .647326985D+04

Gbul0= .215775638D+04

AKK1=-.730679300D+06

TTc=-.135989300D-05

Gdan1= .158467884D+01

Gda10= .528226223D+00

Gwl= .150931003D+05

Gwl0= .503103289D+04

Giecl= .131309974D+05

Giel0= .437699900D+04

Stop - Program terminated.

Ahem1= .270382058D+00

Ahe10= .811146260D+00

Ahem2= .149784437D+01

Ahe20= .449353361D+01

Ahne1= .139896642D+01

Ahn10= .419689971D+01

Ahne2= .196844109D+01

Ahn20= .590532390D+01

Ase1= .149858670D+01

Ase10= .449576059D+01

Abur1= .128219589D+00

Abul0= .384658809D+00

AKK2= .730679400D+06

AAAA= .165468700D+05

Adan1= .523765433D+03

Ada10= .157129647D+04

Aw1= .549920151D-01

Aw10= .164976063D+00

Aiecl= .632092119D-01

Aiel0= .189627700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat07.for

Xo=-.147620200D-03

X= .382747400D-07

OMEGA= .288755600D+01

Ghem1= .293506986D+04

Ghe10= .978356516D+03

Ghem2= .534645386D+03

Ghe20= .178215109D+03

Ghne1= .564943374D+03

Ghn10= .188314438D+03

Ghne2= .237697798D+03

Ghn20= .792325907D+02

Gsel= .534570904D+03

Gsel0= .178190282D+03

Gbur1= .630580103D+04

Gbul0= .210193345D+04

AKK1= .158274500D+07

TTc= .628398400D-06

Gdan1= .108278420D+01

Gda10= .360928028D+00

Gwl= .175137891D+05

Gwl0= .583792906D+04

Giecl= .152369969D+05

Giel0= .507899900D+04

Stop - Program terminated.

Ahem1= .243605786D+00

Ahe10= .730817436D+00

Ahem2= .133733502D+01

Ahe20= .401200551D+01

Ahne1= .126561357D+01

Ahn10= .379684112D+01

Ahne2= .300802114D+01

Ahn20= .902406439D+01

Ase1= .133752135D+01

Ase10= .401256450D+01

Abur1= .113387656D+00

Abul0= .340163005D+00

AKK2=-.158274500D+07

AAAA= .153680600D+05

Adan1= .660334717D+03

Ada10= .198100437D+04

Aw1= .408249750D-01

Aw10= .122474938D+00

Aiecl= .469252574D-01

Aiel0= .140775800D+00

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B>fur00
File name missing or blank - try again!
UNIT 3 ? dat08.for
Xo=-.863709000D-04
X= .233167300D-04
OMEGA= .658820000D+01
Ghem1= .269551341D+04      Ahem1= .254125985D+00
Ghe10= .898504372D+03      Ahe10= .762378037D+00
Ghem2= .458359034D+03      Ahem2= .149446165D+01
Ghe20= .152786328D+03      Ahe20= .448338545D+01
Ghne1= .475311183D+03      Ahne1= .144116113D+01
Ghn10= .158437044D+03      Ahn10= .432348385D+01
Ghne2= .148427401D+03      Ahne2= .461505084D+01
Ghn20= .494757949D+02      Ahn20= .138451540D+02
? Error: LN of non-positive argument
Error Code 2105
PC = 17E3: 00B3; SS = 187E, FP = E804, SP = E806

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B>fur00
File name missing or blank - try again!
UNIT 3 ? dat09.for
Xo=-.209153500D-03
X= .632128500D-06
OMEGA= .301037300D+00
Ghem1= .307993694D+04      Ahem1= .430528295D+00
Ghe10= .102664554D+04      Ahe10= .129158503D+01
Ghem2= .580426253D+03      Ahem2= .228452795D+01
Ghe20= .193475397D+03      Ahe20= .685358460D+01
Ghne1= .626715868D+03      Ahne1= .211579133D+01
Ghn10= .208905267D+03      Ahn10= .634737467D+01
Ghne2= .757077165D+03      Ahne2= .175147272D+01
Ghn20= .252359028D+03      Ahn20= .525441872D+01
Gse1= .580342177D+03      Ase1= .228485892D+01
Gse10= .193447371D+03      Ase10= .685457751D+01
Gbur1= .644118190D+04      Abur1= .205862840D+00
Gbu10= .214706040D+04      Abu10= .617588587D+00
AKK1= .191634700D+06      AKK2=-.191634500D+06      AAAA= .171004000D+05
TTc= .516645800D-05
Gdan1= .318279604D+01      Adan1= .416614820D+03
Gda10= .106093190D+01      Ada10= .124984460D+04
Gwl= .106530420D+05      Awl= .124471489D+00
Gwl0= .355101362D+04      Awl0= .373414507D+00
Giec1= .926814657D+04      Aiec1= .143070677D+00
Giel0= .308938200D+04      Aiel0= .429212100D+00
Stop - Program terminated.

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B>fur00

File name missing or blank - try again!

UNIT 3 ? dat10.for

Xo=-.150240400D-03

X= .357518700D-07

OMEGA= .253894100D+01

Ghem1= .285464161D+04

Ghe10= .951547100D+03

Ghem2= .538526478D+03

Ghe20= .179508807D+03

Ghnel= .570560356D+03

Ghn10= .190186765D+03

Ghne2= .252851820D+03

Ghn20= .842839310D+02

Gsel= .538473331D+03

Gsel0= .179491091D+03

Gbur1= .623391471D+04

Gbul0= .207797134D+04

AKK1= .166889300D+07

TTc= .596017300D-06

Gdan1= .105207499D+01

Gda10= .350691627D+00

Gw1= .176232055D+05

Gw10= .587440119D+04

Giecl= .153321895D+05

Giel0= .511072900D+04

Stop - Program terminated.

Ahem1= .331039805D+00

Ahe10= .993119521D+00

Ahem2= .175478837D+01

Ahe20= .526436567D+01

Ahnel= .165626649D+01

Ahn10= .496880002D+01

Ahne2= .373736681D+01

Ahn20= .112121016D+02

Asel= .175496156D+01

Asel0= .526488526D+01

Abur1= .151590139D+00

Abul0= .454770468D+00

AKK2=-.166889300D+07

AAAA= .150202000D+05

Adan1= .898224941D+03

Ada10= .269467511D+04

Aw1= .536224809D-01

Aw10= .160867460D+00

Aiecl= .616350326D-01

Aiel0= .184905100D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat11.for

Xo=-.598218200D-04

X= .794913200D-05

OMEGA= .637247500D+01

Ghem1= .290096038D+04

Ghe10= .966986690D+03

Ghem2= .490478839D+03

Ghe20= .163492929D+03

Ghnel= .502467132D+03

Ghn10= .167489026D+03

Ghne2= .160263794D+03

Ghn20= .534212590D+02

Gsel= .490459314D+03

Gsel0= .163486420D+03

Gbur1= .615022305D+04

Gbul0= .205007413D+04

AKK1= .192530700D+05

TTc= .508306000D-04

Gdan1= .972187956D+01

Gda10= .324062617D+01

Gw1= .553930945D+04

Gw10= .184643628D+04

Giecl= .481919926D+04

Giel0= .160640000D+04

Stop - Program terminated.

Ahem1= .245091248D+00

Ahe10= .735273822D+00

Ahem2= .144960382D+01

Ahe20= .434881194D+01

Ahnel= .141501793D+01

Ahn10= .424505425D+01

Ahne2= .443643558D+01

Ahn20= .133093082D+02

Asel= .144966153D+01

Asel0= .434898506D+01

Abur1= .115605563D+00

Abul0= .346816727D+00

AKK2=-.192528800D+05

AAAA= .149266800D+05

Adan1= .731340062D+02

Ada10= .219402042D+03

Aw1= .128355349D+00

Aw10= .385066090D+00

Aiecl= .147534883D+00

Aiel0= .442604700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat12.for

Xo=-.620566600D-04

X= .308439600D-04

OMEGA= .130814800D+02

Ghem1= .267104348D+04

Ghe10= .890347729D+03

Ghem2= .417712911D+03

Ghe20= .139237622D+03

Ghne1= .431267342D+03

Ghn10= .143755765D+03

Ghne2= .116127535D+03

Ghn20= .387091741D+02

Gsel= .417688126D+03

Gsel0= .139229360D+03

Gbur1= .536222583D+04

Gbul0= .178740842D+04

AKK1= .535010100D+04

TTc= .180425500D-03

Gdan1= .187902389D+02

Gda10= .626341230D+01

Gwl= .322564663D+04

Gwl0= .107521543D+04

Giecl= .280631241D+04

Giel0= .935437400D+03

Stop - Program terminated.

Ahem1= .221261842D+00

Ahe10= .663785598D+00

Ahem2= .141484734D+01

Ahe20= .424454247D+01

Ahne1= .137037968D+01

Ahn10= .411113947D+01

Ahne2= .508923229D+01

Ahn20= .152676985D+02

Asel= .141493129D+01

Ase10= .424479434D+01

Abur1= .110215425D+00

Abul0= .330646311D+00

AKK2=-.534987700D+04

AAAA= .135812700D+05

Adan1= .314525006D+02

Ada10= .943575119D+02

Aw1= .183219078D+00

Aw10= .549657293D+00

Aiecl= .210596653D+00

Aiel0= .631790000D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat13.for

Xo=-.150494700D-03

X= .343802500D-07

OMEGA= .844259100D+00

Ghem1= .255931349D+04

Ghe10= .853104406D+03

Ghem2= .508508828D+03

Ghe20= .169502924D+03

Ghne1= .543481582D+03

Ghn10= .181160508D+03

Ghne2= .401190737D+03

Ghn20= .133730231D+03

Gsel= .508212247D+03

Gsel0= .169404064D+03

Gbur1= .588305395D+04

Gbul0= .196101777D+04

AKK1= .873553100D+06

TTc= .113789600D-05

Gdan1= .132716760D+01

Gda10= .442389151D+00

Gwl= .150133864D+05

Gwl0= .500446160D+04

Giecl= .130616467D+05

Giel0= .435388200D+04

Stop - Program terminated.

Ahem1= .102957297D+01

Ahe10= .308871925D+01

Ahem2= .518181761D+01

Ahe20= .155454545D+02

Ahne1= .484837037D+01

Ahn10= .145451127D+02

Ahne2= .656794825D+01

Ahn20= .197038469D+02

Asel= .518484160D+01

Ase10= .155545265D+02

Abur1= .447896623D+00

Abul0= .134369002D+01

AKK2=-.873552900D+06

AAAA= .139629300D+05

Adan1= .198543123D+04

Ada10= .595629435D+04

Aw1= .175510037D+00

Aw10= .526530167D+00

Aiecl= .201735666D+00

Aiel0= .605207000D+00

dat

fur00

File name missing or blank - try again!

UNIT 3 ? dat14.for

Xo=-.765942000D-04

X=-.265605600D-04

OMEGA= .530433300D+01

Ghem1= .198855612D+04

Ghe10= .662851968D+03

Ghem2= .675879641D+03

Ghe20= .225293189D+03

Ghnel= .706953418D+03

Ghn10= .235651114D+03

Ghne2= .221115449D+03

Ghn20= .737051418D+02

Gsel= .675760344D+03

Gsel0= .225253424D+03

Gbur1= .506604702D+04

Gbul0= .168868216D+04

AKK1=-.447092800D+04

TTc=-.211580900D-03

Gdan1= .265294231D+02

Gdal0= .884314007D+01

Gwl= .282408133D+04

Gwl0= .941360343D+03

Giecl= .245695072D+04

Giel0= .818983500D+03

Stop - Program terminated.

Ahem1= .809632670D+00

Ahe10= .242889827D+01

Ahem2= .238208092D+01

Ahe20= .714624355D+01

Ahn1= .227737777D+01

Ahn10= .683213405D+01

Ahne2= .728126418D+01

Ahn20= .218437949D+02

Ase1= .238250145D+01

Ase10= .714750513D+01

Abur1= .317802024D+00

Abul0= .953406176D+00

AKK2= .447163300D+04

AAAA= .104660600D+05

Adan1= .606873355D+02

Ada10= .182062026D+03

Aw1= .570096895D+00

Aw10= .171029087D+01

Aiecl= .655283799D+00

Aiel0= .196585200D+01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat15.for

Xo=-.440170900D-04

X= .120210100D-06

OMEGA= .123058500D+02

Ghem1= .176768829D+04

Ghe10= .589229366D+03

Ghem2= .513359026D+03

Ghe20= .171119657D+03

Ghnel= .530236567D+03

Ghn10= .176745503D+03

Ghne2= .126193344D+03

Ghn20= .420644434D+02

Gsel= .513328939D+03

Gsel0= .171109628D+03

Gbur1= .445446351D+04

Gbul0= .148482101D+04

AKK1= .185114500D+07

TTc= .536444700D-06

Gdan1= .113378869D+01

Gdal0= .377929522D+00

Gwl= .114931163D+05

Gwl0= .383103834D+04

Giecl= .999901109D+04

Giel0= .333300300D+04

Stop - Program terminated.

Ahem1= .806137603D+00

Ahe10= .241841307D+01

Ahem2= .277583509D+01

Ahe20= .832750618D+01

Ahn1= .268747968D+01

Ahn10= .806243992D+01

Ahne2= .112921962D+02

Ahn20= .338765923D+02

Ase1= .277599779D+01

Ase10= .832799427D+01

Abur1= .319903844D+00

Abul0= .959711637D+00

AKK2=-.185114400D+07

AAAA= .916296500D+04

Adan1= .125684796D+04

Ada10= .377054428D+04

Aw1= .123987261D+00

Aw10= .371961822D+00

Aiecl= .142514093D+00

Aiel0= .427542300D+00

```

B>fur00
File name missing or blank - try again!
UNIT 3 ? dat16.for
Xo=-.113834800D-03
X=-.115262200D-03
OMEGA= .561571900D+01
Ghem1= .311477154D+04      Ahem1= .513681333D+00
Ghe10= .103825707D+04      Ahe10= .154104417D+01
Ghem2= .538378945D+03      Ahem2= .297188442D+01
Ghe20= .179459629D+03      Ahe20= .891565422D+01
Ghnel= .564014497D+03      Ahnel= .283680651D+01
Ghn10= .188004812D+03      Ahn10= .851042046D+01
Ghne2= .171197653D+03      Ahne2= .934592250D+01
Ghn20= .570658783D+02      Ahn20= .280377705D+02
Gsel= .538354791D+03      Asel= .297201776D+01
Gse10= .179451578D+03      Ase10= .891605424D+01
Gbur1= .607437850D+04      Abur1= .263401433D+00
Gbu10= .202479261D+04      Abu10= .790204384D+00
AKK1=-.161387600D+04      AKK2= .161406700D+04      AAAA= .177097200D+05
TTc=-.589190600D-03
Gdan1= .363531135D+02      Adan1= .440127363D+02
Gda10= .121177032D+02      Ada10= .132038223D+03
Gwl= .282460750D+04      Awl= .566450382D+00
Gwl0= .941535733D+03      Awl0= .169935133D+01
Giecl= .245740838D+04      Aiecl= .651092433D+00
Gie10= .819136000D+03      Aie10= .195327700D+01
Stop - Program terminated.

```

```

B>fur00
File name missing or blank - try again!
UNIT 3 ? dat17.for
Xo=-.241221900D-04
X= .349693500D-04
OMEGA= .220678400D+02
Ghem1= .221299251D+04      Ahem1= .501583261D+00
Ghe10= .737664091D+03      Ahe10= .150474995D+01
Ghem2= .312140893D+03      Ahem2= .355608645D+01
Ghe20= .104046953D+03      Ahe20= .106682605D+02
Ghnel= .318691738D+03      Ahnel= .348298957D+01
Ghn10= .106230568D+03      Ahn10= .104489698D+02
Ghne2= .841286679D+02      Ahne2= .131940755D+02
Ghn20= .280428863D+02      Ahn20= .395822309D+02
? Error: LN of non-positive argument
Error Code 2105
PC = 17E3: 00B3; SS = 187E, FP = E804, SP = E806

```

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat18.for

Xo=-.882350500D-04

X= .262827800D-06

OMEGA= .584458300D+01

Ghem1= .231313262D+04

Ghe10= .771044122D+03

Ghem2= .427902446D+03

Ghe20= .142634133D+03

Ghnel= .447301091D+03

Ghn10= .149100348D+03

Ghne2= .139818101D+03

Ghn20= .466060286D+02

Gsel= .427875431D+03

Gsel0= .142625128D+03

Gbur1= .543867398D+04

Gbul0= .181289113D+04

AKK1= .604410200D+06

TTc= .164330500D-05

Gdan1= .148213450D+01

Gda10= .494044779D+00

Gwl= .127028533D+05

Gwl0= .423428399D+04

Giecl= .110514823D+05

Giel0= .368382700D+04

Stop - Program terminated.

Ahem1= .566331559D+00

Ahe10= .169899486D+01

Ahem2= .306144546D+01

Ahe20= .918433737D+01

Ahnel= .292867607D+01

Ahn10= .878602915D+01

Ahne2= .936931622D+01

Ahn20= .281079517D+02

Asel= .306163875D+01

Ase10= .918491725D+01

Abur1= .240867536D+00

Abul0= .722602686D+00

AKK2=-.604410000D+06

AAAA= .120499000D+05

Adan1= .883860408D+03

Ada10= .265158151D+04

Aw1= .103126437D+00

Aw10= .309379343D+00

Aiecl= .118536136D+00

Aiel0= .355608500D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat19.for

Xo=-.720964800D-04

X= .255023600D-06

OMEGA= .784783600D+01

Ghem1= .205315669D+04

Ghe10= .684385490D+03

Ghem2= .677245857D+03

Ghe20= .225748594D+03

Ghnel= .706278369D+03

Ghn10= .235426097D+03

Ghne2= .195143509D+03

Ghn20= .650478293D+02

Gsel= .677150419D+03

Gsel0= .225716782D+03

Gbur1= .510053657D+04

Gbul0= .170017867D+04

AKK1= .742799300D+06

TTc= .133313900D-05

Gdan1= .214843061D+01

Gda10= .716143461D+00

Gwl= .981341012D+04

Gwl0= .327113635D+04

Giecl= .853766648D+04

Giel0= .284588800D+04

Stop - Program terminated.

Ahem1= .808511112D+00

Ahe10= .242553360D+01

Ahem2= .245110396D+01

Ahe20= .735331267D+01

Ahnel= .235034807D+01

Ahn10= .705104497D+01

Ahne2= .850656016D+01

Ahn20= .255196833D+02

Asel= .245144942D+01

Ase10= .735434905D+01

Abur1= .325455955D+00

Abul0= .976367970D+00

AKK2=-.742798600D+06

AAAA= .106817400D+05

Adan1= .772657022D+03

Ada10= .231797132D+04

Aw1= .169156285D+00

Aw10= .507468910D+00

Aiecl= .194432519D+00

Aiel0= .583297600D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat20.for

Xo=-.412997100D-04

X= .121749600D-06

OMEGA= .102674300D+02

Ghem1= .147633557D+04

Ghe10= .492111804D+03

Ghem2= .320619366D+03

Ghe20= .106873110D+03

Ghne1= .332115426D+03

Ghn10= .110705130D+03

Ghne2= .808473436D+02

Ghn20= .269491116D+02

Gsel= .320606931D+03

Gsel0= .106868965D+03

Gbur1= .417840607D+04

Gbu10= .139280187D+04

AKK1= .138575800D+07

TTc= .716959400D-06

Gdan1= .770037938D+00

Gda10= .256679285D+00

Gw1= .134011734D+05

Gw10= .446705733D+04

Giecl= .116590210D+05

Giel0= .388634000D+04

Stop - Program terminated.

Ahem1= .159855256D+01

Ahe10= .479565819D+01

Ahem2= .736075314D+01

Ahe20= .220822618D+02

Ahne1= .710596322D+01

Ahn10= .213178920D+02

Ahne2= .291908169D+02

Ahn20= .875724601D+02

Asel= .736103862D+01

Ase10= .220831182D+02

Abur1= .564808676D+00

Abu10= .169442621D+01

AKK2=-.138575700D+07

AAAA= .775917400D+04

Adan1= .306478406D+04

Ada10= .919435318D+04

Aw1= .176103982D+00

Aw10= .528312002D+00

Aiecl= .202418367D+00

Aiel0= .607255200D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat21.for

Xo=-.270153500D-04

X= .288788400D-06

OMEGA= .221316400D+02

Ghem1= .152433099D+04

Ghe10= .508110274D+03

Ghem2= .393270920D+03

Ghe20= .131090293D+03

Ghne1= .404118673D+03

Ghn10= .134706210D+03

Ghne2= .829208998D+02

Ghn20= .276402970D+02

Gsel= .393261242D+03

Gsel0= .131087066D+03

Gbur1= .389085975D+04

Gbu10= .129695311D+04

AKK1= .141339600D+07

TTc= .702125700D-06

Gdan1= .113186098D+01

Gda10= .377286951D+00

Gw1= .945588387D+04

Gw10= .315196095D+04

Giecl= .822661892D+04

Giel0= .274220600D+04

Stop - Program terminated.

Ahem1= .826592131D+00

Ahe10= .247977666D+01

Ahem2= .320389822D+01

Ahe20= .961169569D+01

Ahne1= .311789602D+01

Ahn10= .935368907D+01

Ahne2= .151952041D+02

Ahn20= .455856173D+02

Asel= .320397707D+01

Ase10= .961193224D+01

Abur1= .323835882D+00

Abu10= .971507751D+00

AKK2=-.141339500D+07

AAAA= .786017900D+04

Adan1= .111321092D+04

Ada10= .333963313D+04

Aw1= .133250367D+00

Aw10= .399751146D+00

Aiecl= .153161343D+00

Aiel0= .459484100D+00

部分領域[I]のv,h,cを求めるプログラム

```

B>TYPE FUR01.FOR
C      SUB-REGION*1
C      CANONICAL-FUNCTION
C
      DOUBLE PRECISION V,H,Cp,E2
      DIMENSION T(50)
      AA0=6824.687741
      AA1=-542.2063673
      AA2=-20966.66205
      AA3=39412.86787
      AA4=-67332.77739
      AA5=99023.81028
      AA6=-109391.1774
      AA7=85908.41667
      AA8=-45111.68742
      AA9=14181.38926
      AA10=-2017.271113
      AA11=7.982692717
      AA12=-.02616571843
      AA13=.00152241179
      AA14=.02284279054
      AA15=242.1647003
      AA16=.0000000001269716088
      AA17=.0000002074838328
      AA18=.0000000217402035
      AA19=.000000001105710498
      AA20=12.93441934
      AA21=.00001308119072
      AA22=.00000000000006047626338
      A1=.8438375405
      A2=.0005362162162
      A3=1.72
      A4=.07342278489
      A5=.0497585887
      A6=.65371543
      A7=.00000115
      A8=.000015108
      A9=.14188
      A10=7.002753165
      A11=.0002995284926
      A12=.204
      L0=15.74373327
      L1=-34.17061978
      L2=19.31380707
      ALF0=0.
      ALF1=0.

```

C

C

```

OPEN(3,FILE='DAT300.FOR')
DO 4 I=1,23
READ (3,*) T(I)
TT=T(I)/647.3
Y=1.-A1*TT**2-A2/(TT**6)
YY=-2.*A1*TT+6.*A2/TT**7
B=L0+L1*TT+L2*(TT**2)
Z=Y+SQRT(A3*Y**2-2.*A4*TT+2.*A5*B)
W=5./17.
X1=AA11*A5/(Z**W)+AA12+AA13*TT+AA14*TT**2
X2=AA16/(A7+TT**19)+AA15*(A6-TT)**10
X3=(AA17+2.*AA18*B+3.*AA19*B**2)/(A8+TT**11)
X4=AA20*TT**18*(A9+TT**2)*(-3./(A10+B)**4+A11)
X5=3.*AA21*(A12-TT)*B**2+4.*AA22*B**3/(TT**20)
X=X1+X2+X3+X4+X5
V=X*.00317
WRITE(*,6) T(I)
FORMAT(6H T(I)=,D16.9)

```

6
C
C

```

E1=ALF0+AA0*TT
EE1=-AA1+AA3*TT**2+2.*AA4*TT**3+3.*AA5*TT**4
EE2=4.*AA6*TT**5+5.*AA7*TT**6+6.*AA8*TT**7+7.*AA9*TT**8
EE3=8.*AA10*TT**9
E2=EE1+EE2+EE3
E333=AA11/(Z**W)
E33=Z*(17.*(Z/29.-Y/12.)+5.*TT*YY/12.)+A4*TT-(A3-1.)*TT*Y*YY
E3=E33*E333
E44=AA12-AA14*TT**2+AA15*(9.*TT+A6)*(A6-TT)**9
E444=AA16*(20.*TT**19+A7)/(A7+TT**19)**2
E4=(E44+E444)*B
E55=-(12.*TT**11+A8)/(A8+TT**11)**2
E555=AA17*B+AA18*B**2+AA19*B**3
E5=E55*E555
E66=AA20*TT**18*(17.*A9+19.*TT**2)
E666=1./(A10+B)**3+A11*B
E6=E66*E666
E7=AA21*A12*B**3+21.*AA22*B**4/TT**20
E=E1+E2+E3+E4+E5+E6+E7
H=E*.00317*225.56*.001*.2388459
WRITE(*,1) V,H,T
FORMAT(3H V=,D16.9,5X,2HH=,D16.9,5X,2HT=,D16.9)

```

1
C

```

Q=1.-A1*TT**2-A2/TT**6
O=-2.*A1*TT+6.*A2/TT**7
P=-2.*A1-42.*A2/TT**8
R=Q+SQRT(A3*Q**2-2.*A4*TT+2.*A5*B)
S=O+(A3*Q*O-A4)/(SQRT(A3*Q**2-2.*A4*TT+2.*A5*B))
UU=P+A3*(O**2+Q*P)/(SQRT(A3*Q**2-2.*A4*TT+2.*A5*B))
UUU=((A3*Q*O-A4)**2)/((A3*Q**2-2.*A4*TT+2.*A5*B)**(3./2.))
U=UU-UUU
C1=-AA0/TT
CA2=2.*AA3+6.*AA4*TT+12.*AA5*TT**2+20.*AA6*TT**3
CB2=30.*AA7*TT**4+42.*AA8*TT**5+72.*AA10*TT**7+56.*AA9*TT**6
C2=CA2+CB2
CA3=(12.*R/29.-Q)
CB3=U/(R**(5./17.))-5.*S**2/(17.*R**(22./17.))
CC3=(24.*S/29.-2.*O)*S/(R**(5./17.))
CD3=(17.*U/29.-17.*P/12.)*R**(12./17.)
C3=AA11*(CA3*CB3+CC3+CD3)
CA4=2.*AA14+90.*AA15*(A6-TT)**8+722.*AA16*TT**36/(A7+TT**19)**3
CB4=-342.*AA16*TT**17/((A7+TT**19)**2)
C4=B*(CA4+CB4)
CA5=242.*TT**20/(A8+TT**11)**3-110.*TT**9/(A8+TT**11)
CB5=AA17*B+AA18*B**2+AA19*B**3
C5=-CA5*CB5
C6=-AA20*TT**16*(306.*A9+380.*TT**2)*(1./((A10+B)**3)+A11*B)
C7=420.*AA22*B**4/(TT**22)
C=C1+C2+C3+C4+C5+C6+C7
Cp=-TT*108.3275143*0.001*.2388459*C
WRITE(*,2) Cp
FORMAT(4H Cp=,D16.9)
CONTINUE
STOP
END

```

部分領域[I]の物性値を用いた計算値

FUR00

File name missing or blank - try again!

UNIT 3 ? DAT00.FOR

Xo=-.184180700D-03

X= .344451400D-03

OMEGA= .252169000D+00

Ghem1= .282382431D+04

Ghe10= .941274668D+03

Ghem2= .316113779D+04

Ghe20= .105371248D+04

Ghne1= .719048426D+04

Ghn10= .239682783D+04

Ghne2= .976628054D+03

Ghn20= .325542649D+03

Gsel= .713132229D+04

Gse10= .237710717D+04

Gbur1= .611354534D+04

Gbu10= .203784823D+04

AKK1=-.102383700D+04

TTc=-.681181400D-03

Gdan1= .447565733D+03

Gda10= .149188562D+03

Stop - Program terminated.

Ahem1= .920737169D+00

Ahe10= .276221181D+01

Ahem2= .822488666D+00

Ahe20= .246746626D+01

Ahne1= .361588998D+00

Ahn10= .108476711D+01

Ahne2= .266222129D+01

Ahn20= .798666474D+01

Asel= .364588767D+00

Ase10= .109376642D+01

Abur1= .425285142D+00

Abu10= .127585557D+01

AKK2= .105300900D+04

AAAA= .158329000D+05

Adan1= .580920255D+01

Ada10= .174276095D+02

File name missing or blank - try again!

UNIT 3 ? DAT01.FOR

Xo=-.101855800D-03

X= .295503100D-02

OMEGA= .311986800D+01

Ghem1= .213447940D+04

Ghe10= .711493058D+03

Ghem2= .227765082D+04

Ghe20= .759216857D+03

Ghne1= .498207091D+04

Ghn10= .166069012D+04

Ghne2= .825402015D+04

Ghn20= .275133975D+04

Gsel= .113455072D+05

Gse10= .378183534D+04

Gbur1= .532810423D+04

Gbu10= .177603455D+04

AKK1=-.202593400D+03

TTc=-.249506600D-02

Gdan1= .629470476D+03

Gda10= .209823469D+03

Stop - Program terminated.

Ahem1= .946366592D+00

Ahe10= .283910008D+01

Ahem2= .886878701D+00

Ahe20= .266063639D+01

Ahne1= .405453884D+00

Ahn10= .121636178D+01

Ahne2= .244729230D+00

Ahn20= .734187771D+00

Asel= .178044045D+00

Ase10= .534132192D+00

Abur1= .379121712D+00

Abu10= .113736526D+01

AKK2= .230463800D+03

AAAA= .113507900D+05

Adan1= .320904646D+01

Ada10= .962714041D+01

FUR00

File name missing or blank - try again!

UNIT 3 ? DAT02.FOR

Xo=-.160733700D-03

X= .291410900D-04

OMEGA= .114980800D+01

Ghem1= .274149319D+04

Ghe10= .913830964D+03

Ghem2= .175344454D+05

Ghe20= .584481449D+04

Ghne1= .239269557D+05

Ghn10= .797565104D+04

Ghne2= .473687167D+04

Ghn20= .157895705D+04

Gse1= .131038467D+05

Gse10= .436794842D+04

Gbur1= .612175467D+04

Gbu10= .204058467D+04

AKK1=-.171487600D+04

TTc=-.259063700D-03

Gdan1= .919573794D+03

Gda10= .306524565D+03

Stop - Program terminated.

Ahem1= .561737672D+00

Ahe10= .168521320D+01

Ahem2= .878271293D-01

Ahe20= .263481416D+00

Ahne1= .643625549D-01

Ahn10= .193087686D+00

Ahne2= .325109082D+00

Ahn20= .975327351D+00

Ase1= .117522743D+00

Ase10= .352568266D+00

Abur1= .251561862D+00

Abu10= .754685666D+00

AKK2= .207019800D+04

AAAA= .147863200D+05

Adan1= .167468887D+01

Ada10= .502406716D+01

B>

FUR00

File name missing or blank - try again!

UNIT 3 ? DAT03.FOR

Xo=-.964026100D-04

X= .942558500D-04

OMEGA= .709566600D+01

Ghem1= .263568893D+04

Ghe10= .878562881D+03

Ghem2= .164870783D+05

Ghe20= .549569219D+04

Ghne1= .198314158D+05

Ghn10= .661047123D+04

Ghne2= .521310563D+04

Ghn20= .173770169D+04

Gse1= .162925496D+05

Gse10= .543084929D+04

Gbur1= .580860511D+04

Gbu10= .193620150D+04

AKK1=-.122968700D+04

TTc=-.323974700D-03

Gdan1= .972656615D+03

Gda10= .324218837D+03

Stop - Program terminated.

Ahem1= .515994124D+00

Ahe10= .154798254D+01

Ahem2= .824888420D-01

Ahe20= .247466553D+00

Ahne1= .685780587D-01

Ahn10= .205734198D+00

Ahne2= .260880960D+00

Ahn20= .782642964D+00

Ase1= .834737368D-01

Ase10= .250421237D+00

Abur1= .234135386D+00

Abu10= .702406234D+00

AKK2= .157198000D+04

AAAA= .135561500D+05

Adan1= .139823241D+01

Ada10= .419469767D+01

B>

DAT04.FOR

Xo=-.633457600D-04

X= .372291100D-01

OMEGA= .205565200D+02

Ghem1= .210563667D+04

Ghe10= .701878815D+03

Ghem2= .110152777D+04

Ghe20= .367175884D+03

Ghne1= .223083348D+04

Ghn10= .743611078D+03

Ghne2= .323978723D+04

Ghn20= .107992896D+04

Gse1= .100161232D+05

Gse10= .333870738D+04

Gbur1= .537559990D+04

Gbu10= .179186644D+04

AKK1=-.203292900D+02

TTc=-.176169100D-01

Gdan1= .841700558D+03

Gda10= .280566822D+03

Stop - Program terminated.

Ahem1= .251705342D+00

Ahe10= .755116109D+00

Ahem2= .481149921D+00

Ahe20= .144344992D+01

Ahne1= .237579365D+00

Ahn10= .712738171D+00

Ahne2= .163590990D+00

Ahn20= .490773022D+00

Ase1= .529146844D-01

Ase10= .158744070D+00

Abur1= .985936471D-01

Abu10= .295780973D+00

AKK2= .276377300D+02

AAAA= .107088600D+05

Adan1= .629677615D+00

Ada10= .188903305D+01

Xo=-.208223700D-04

X= .561629300D-01

OMEGA= .216242000D+02

Ghem1= .263350144D+04

Ghe10= .877833717D+03

Ghem2= .103722251D+04

Ghe20= .345740801D+03

Ghne1= .203366046D+04

Ghn10= .677886748D+03

Ghne2= .330941975D+04

Ghn20= .110313980D+04

Gse1= .661939091D+04

Gse10= .220646340D+04

Gbur1= .445656583D+04

Gbu10= .148552178D+04

AKK1=-.148167700D+02

TTc=-.160477000D-01

Gdan1= .125771995D+04

Gda10= .419239939D+03

Stop - Program terminated.

Ahem1= .284791946D+00

Ahe10= .854375932D+00

Ahem2= .723084959D+00

Ahe20= .216925511D+01

Ahne1= .368793126D+00

Ahn10= .110637950D+01

Ahne2= .226625831D+00

Ahn20= .679877566D+00

Ase1= .113303476D+00

Ase10= .339910465D+00

Abur1= .168291018D+00

Abu10= .504873108D+00

AKK2= .265935200D+02

AAAA= .132870600D+05

Adan1= .596317167D+00

Ada10= .178895169D+01

D/
ile name missing or blank - try again!

UNIT 3 ? DAT06.FOR

Xo=-.190939500D-03

X=-.861978600D-04

OMEGA= .909788600D+00

Ghem1= .306973032D+04

Ghe10= .102324333D+04

Ghem2= .269442666D+05

Ghe20= .898142124D+04

Ghne1= .175521015D+05

Ghn10= .585069987D+04

Ghne2= .414376201D+04

Ghn20= .138125385D+04

Gsel= .139847312D+05

Gse10= .466157658D+04

Gbur1= .647326985D+04

Gbu10= .215775638D+04

AKK1=-.693719400D+04

TTc=-.104183900D-03

Gdan1= .436060984D+03

Gda10= .145353646D+03

Stop - Program terminated.

Ahem1= .270382058D+00

Ahe10= .811146260D+00

Ahem2= .308043270D-01

Ahe20= .924129910D-01

Ahne1= .472877849D-01

Ahn10= .141863370D+00

Ahne2= .200301079D+00

Ahn20= .600903301D+00

Ase1= .593504434D-01

Ase10= .178051349D+00

Abur1= .128219589D+00

Abu10= .384658809D+00

AKK2= .708826500D+04

AAAA= .165468700D+05

Adan1= .190340349D+01

Ada10= .571021110D+01

e name missing or blank - try again!

UNIT 3 ? DAT07.FOR

Xo=-.147620200D-03

X= .441768600D-04

OMEGA= .288755600D+01

Ghem1= .293506986D+04

Ghe10= .978356516D+03

Ghem2= .187914401D+05

Ghe20= .626381269D+04

Ghne1= .224751831D+05

Ghn10= .749172691D+04

Ghne2= .958008488D+04

Ghn20= .319336128D+04

Gsel= .167297103D+05

Gse10= .557656951D+04

Gbur1= .630580103D+04

Gbu10= .210193345D+04

AKK1=-.104017700D+04

TTc=-.377997200D-03

Gdan1= .108656719D+04

Gda10= .362189024D+03

Stop - Program terminated.

Ahem1= .243605786D+00

Ahe10= .730817436D+00

Ahem2= .380492392D-01

Ahe20= .114147730D+00

Ahne1= .318128665D-01

Ahn10= .954386097D-01

Ahne2= .746339942D-01

Ahn20= .223902007D+00

Ase1= .427383371D-01

Ase10= .128215025D+00

Abur1= .113387656D+00

Abu10= .340163005D+00

AKK2= .133947700D+04

AAAA= .153680600D+05

Adan1= .658035699D+00

Ada10= .197410731D+01

le name missing or blank - try again!

UNIT 3 ? DAT08.FOR

Xo=-.863709000D-04

X= .281830900D-01

OMEGA= .658820000D+01

Ghem1= .269551341D+04

Ghe10= .898504372D+03

Ghem2= .148389434D+04

Ghe20= .494631393D+03

Ghne1= .303013662D+04

Ghn10= .101004543D+04

Ghne2= .566517045D+04

Ghn20= .188838994D+04

Gsel= .119418359D+05

Gse10= .398061153D+04

Gbur1= .593753594D+04

Gbu10= .197917843D+04

AKK1=-.254623000D+02

TTc=-.152530200D-01

Gdan1= .101510663D+04

Gda10= .338368840D+03

Stop - Program terminated.

Ahem1= .254125985D+00

Ahe10= .762378037D+00

Ahem2= .461623164D+00

Ahe20= .138486964D+01

Ahne1= .226062414D+00

Ahn10= .678187316D+00

Ahne2= .120914279D+00

Ahn20= .362742876D+00

Ase1= .573613645D-01

Ase10= .172084112D+00

Abur1= .115367723D+00

Abu10= .346103206D+00

AKK2= .330163600D+02

AAAA= .137422900D+05

Adan1= .674805956D+00

Ada10= .202441809D+01

Xo=-.209153500D-03

X= .711437300D-03

OMEGA= .301037300D+00

Ghem1= .307993694D+04

Ghe10= .102664554D+04

Ghem2= .724788492D+04

Ghe20= .241596138D+04

Ghne1= .414325267D+05

Ghn10= .138108407D+05

Ghne2= .441274257D+04

Ghn20= .147091403D+04

Gsel= .130922716D+05

Gse10= .436409007D+04

Gbur1= .644118190D+04

Gbu10= .214706040D+04

AKK1= .525130600D+03

TTc=-.811632800D-03

Gdan1= .222333564D+04

Gda10= .741111799D+03

Stop - Program terminated.

Ahem1= .430528295D+00

Ahe10= .129158503D+01

Ahem2= .182949925D+00

Ahe20= .548849833D+00

Ahne1= .320038411D-01

Ahn10= .960115336D-01

Ahne2= .300493396D+00

Ahn20= .901480284D+00

Ase1= .101281125D+00

Ase10= .303843408D+00

Abur1= .205862840D+00

Abu10= .617588587D+00

AKK2= .276233700D+03

AAAA= .171004000D+05

Adan1= .596401181D+00

Ada10= .178920374D+01

B>

e name missing or blank - try again!

UNIT 3 ? DAT10.FOR

Xo=-.150240400D-03

X= .416620500D-04

OMEGA= .253894100D+01

Ghem1= .285464161D+04

Ghe10= .951547100D+03

Ghem2= .191036181D+05

Ghe20= .636787202D+04

Ghne1= .218665792D+05

Ghn10= .728885896D+04

Ghne2= .104585524D+05

Ghn20= .348618375D+04

Gsel= .174610617D+05

Gsel0= .582035326D+04

Gbur1= .623391471D+04

Gbu10= .207797134D+04

AKK1= .373569900D+03

TTc=-.143601900D-02

Gdan1= .228322206D+04

Gda10= .761073937D+03

Stop - Program terminated.

Ahem1= .331039805D+00

Ahe10= .993119521D+00

Ahem2= .494670692D-01

Ahe20= .148401224D+00

Ahne1= .432166362D-01

Ahn10= .129649923D+00

Ahne2= .903566734D-01

Ahn20= .271070049D+00

Ase1= .541204205D-01

Ase10= .162361279D+00

Abur1= .151590139D+00

Abu10= .454770468D+00

AKK2=-.807354000D+02

AAAA= .150202000D+05

Adan1= .413888783D+00

Ada10= .124166648D+01

D>

le name missing or blank - try again!

UNIT 3 ? DAT11.FOR

Xo=-.598218200D-04

X= .945776100D-02

OMEGA= .637247500D+01

Ghem1= .290096038D+04

Ghe10= .966986690D+03

Ghem2= .230880425D+04

Ghe20= .769601335D+03

Ghne1= .483705470D+04

Ghn10= .161235139D+04

Ghne2= .588579488D+04

Ghn20= .196193142D+04

Gsel= .133428160D+05

Gsel0= .444760486D+04

Gbur1= .615022305D+04

Gbu10= .205007413D+04

AKK1=-.746346700D+02

TTc=-.572133600D-02

Gdan1= .101897623D+04

Gda10= .339658708D+03

Stop - Program terminated.

Ahem1= .245091248D+00

Ahe10= .735273822D+00

Ahem2= .307951616D+00

Ahe20= .923854947D+00

Ahne1= .146990275D+00

Ahn10= .440970872D+00

Ahne2= .120799317D+00

Ahn20= .362397989D+00

Ase1= .532871021D-01

Ase10= .159861324D+00

Abur1= .115605563D+00

Abu10= .346816727D+00

AKK2= .919285000D+02

AAAA= .149266800D+05

Adan1= .697759159D+00

Ada10= .209327770D+01

U/
e name missing or blank - try again!

UNIT 3 ? DAT12.FOR

Xo=-.620566600D-04

X= .372613400D-01

OMEGA= .130814800D+02

Ghem1= .267104348D+04

Ghe10= .890347729D+03

Ghem2= .967700923D+03

Ghe20= .322566939D+03

Ghne1= .193871742D+04

Ghn10= .646239071D+03

Ghne2= .402943736D+04

Ghn20= .134314564D+04

Gse1= .983313391D+04

Gse10= .327771095D+04

Gbur1= .536222583D+04

Gbu10= .178740842D+04

AKK1=-.195942100D+02

TTc=-.218378700D-01

Gdan1= .946994132D+03

Gda10= .315664677D+03

Stop - Program terminated.

Ahem1= .221261842D+00

Ahe10= .663785598D+00

Ahem2= .610725883D+00

Ahe20= .183217785D+01

Ahne1= .304840712D+00

Ahn10= .914522236D+00

Ahne2= .146670601D+00

Ahn20= .440011851D+00

Ase1= .601029138D-01

Ase10= .180308761D+00

Abur1= .110215425D+00

Abu10= .330646311D+00

AKK2= .241085800D+02

AAAA= .135812700D+05

Adan1= .624079896D+00

Ada10= .187223989D+01

1)

SIG= .100000000D+03

SIG= .950495100D+02

SIG= .938279600D+02

SIG= .931008800D+02

SIG= .824337900D+02

SIG= .890088300D+02

SIG= .892760500D+02

Stop - Program terminated.

```
B>TYPE FUR045.FOR
C      STANDARD DEVIATION
C
      DIMENSION Gh(30),G(30),E(30),S(30),Gs(30),Gb(30),F(30)
      DOUBLE PRECISION SIG
      OPEN(3,FILE='DAT400.FOR')
      DO 1 I=1,7
      READ(3,*) Gh(I)
      Ghe=0.
      Gh(I)=Ghe+Gh(I)
      U=(Gh(I)/7.)*2
      G(I)=Gh(I)**2
      G(I)=Ghe+G(I)
      E(I)=G(I)/7.
      S(I)=SQRT(E(I)-U)
1      CONTINUE
      S(I)=(2600.-S(I))*100./2600.
      WRITE(*,2) S(I)
2      FORMAT(5H SIG=,D16.9)
C
      OPEN(4,FILE='DAT401.FOR')
      DO 5 J=1,7
      READ(4,*) Gh(J)
      Ghem2=0.
      Gh(J)=Ghem2+Gh(J)
      U=(Gh(J)/7.)*2
      G(J)=Gh(J)**2
      G(J)=Ghem2+G(J)
      E(J)=G(J)/7.
      S(J)=SQRT(E(J)-U)
5      CONTINUE
      S(J)=(2020.-S(J))*100./2020.
      WRITE(*,6) S(J)
6      FORMAT(5H SIG=,D16.9)
C
      OPEN(7,FILE='DAT402.FOR')
      DO 8 K=1,7
      READ(7,*) Gh(K)
      Ghne1=0.
      Gh(K)=Ghne1+Gh(K)
      U=(Gh(K)/7.)*2
      G(K)=Gh(K)**2
      G(K)=Ghne1+G(K)
      E(K)=G(K)/7.
      S(K)=SQRT(E(K)-U)
8      CONTINUE
      S(K)=(1540.-S(K))*100./1540.
      WRITE(*,9) S(K)
9      FORMAT(5H SIG=,D16.9)
C
```

```

OPEN(10,FILE='DAT403.FOR')
DO 11 L=1,7
READ(10,*) Gh(L)
Ghne2=0.
Gh(L)=Ghne2+Gh(L)
U=(Gh(L)/7.)*2
G(L)=Gh(L)**2
G(L)=Ghne2+G(L)
E(L)=G(L)/7.
S(L)=SQRT(E(L)-U)
11 CONTINUE
S(L)=(1360.-S(L))*100./1360.
WRITE(*,12) S(L)
12 FORMAT(5H SIG=,D16.9)
C
OPEN(13,FILE='DAT404.FOR')
DO 14 M=1,7
READ(13,*) Gs(M)
Gse=0.
Gs(M)=Gse+Gs(M)
U=(Gs(M)/7.)*2
G(M)=Gse+G(M)
E(M)=G(M)/7.
S(M)=SQRT(E(M)-U)
14 CONTINUE
S(M)=(530.-S(M))*100./530.
WRITE(*,15) S(M)
15 FORMAT(5H SIG=,D16.9)
C
OPEN(16,FILE='DAT405.FOR')
DO 17 N=1,7
READ(16,*) Gb(N)
Gbur=0.
Gb(N)=Gbur+Gb(N)
U=(Gb(N)/7.)*2
G(N)=Gbur+G(N)
E(N)=G(N)/7.
S(N)=SQRT(E(N)-U)
17 CONTINUE
S(N)=(750.-S(N))*100./750.
WRITE(*,18) S(N)
18 FORMAT(5H SIG=,D16.9)
C
OPEN(19,FILE='DAT406.FOR')
DO 20 II=1,7
READ(19,*) G(II)
Gdan=0.
G(II)=Gdan+G(II)
U=(G(II)/7.)*2
F(II)=Gdan+G(II)
E(II)=F(II)/7.
S(II)=SQRT(ABS(E(II)-U))
20 CONTINUE
S(II)=(830.-S(II))*100./830.
WRITE(*,21) S(II)
21 FORMAT(5H SIG=,D16.9)
STOP
END

```

h) h)

```
B>TYPE FUR01.FOR
C      SUB-REGION*1
C      CANONICAL-FUNCTION
C
      DOUBLE PRECISION V,H,Cp,E2
      AA0=6824.687741
      AA1=-542.2063673
      AA2=-20966.66205
      AA3=39412.86787
      AA4=-67332.77739
      AA5=99023.81028
      AA6=-109391.1774
      AA7=85908.41667
      AA8=-45111.68742
      AA9=14181.38926
      AA10=-2017.271113
      AA11=7.982692717
      AA12=-.02616571843
      AA13=.00152241179
      AA14=.02284279054
      AA15=242.1647003
      AA16=.0000000001269716088
      AA17=.0000002074838328
      AA18=.0000000217402035
      AA19=.000000001105710498
      AA20=12.93441934
      AA21=.00001308119072
      AA22=.00000000000006047626338
      A1=.8438375405
      A2=.0005362162162
      A3=1.72
      A4=.07342278489
      A5=.0497585887
      A6=.65371543
      A7=.00000115
      A8=.000015108
      A9=.14188
      A10=7.002753165
      A11=.0002995284926
      A12=.204
      L0=15.74373327
      L1=-34.17061978
      L2=19.31380707
      ALF0=0.
      ALF1=0.
```

C

C

T=374.85

C

TT=T/647.3

Y=1.-A1*TT**2-A2/(TT**6)

YY=-2.*A1*TT+6.*A2/TT**7

B=L0+L1*TT+L2*(TT**2)

Z=Y+SQRT(A3*Y**2-2.*A4*TT+2.*A5*B)

W=5./17.

X1=AA11*A5/(Z**W)+AA12+AA13*TT+AA14*TT**2

X2=AA16/(A7+TT**19)+AA15*(A6-TT)**10

X3=(AA17+2.*AA18*B+3.*AA19*B**2)/(A8+TT**11)

X4=AA20*TT**18*(A9+TT**2)*(-3./(A10+B)**4+A11)

X5=3.*AA21*(A12-TT)*B**2+4.*AA22*B**3/(TT**20)

X=X1+X2+X3+X4+X5

V=X*.00317

C

C

E1=ALF0+AA0*TT

EE1=-AA1+AA3*TT**2+2.*AA4*TT**3+3.*AA5*TT**4

EE2=4.*AA6*TT**5+5.*AA7*TT**6+6.*AA8*TT**7+7.*AA9*TT**8

EE3=8.*AA10*TT**9

E2=EE1+EE2+EE3

E333=AA11/(Z**W)

E33=Z*(17.*(Z/29.-Y/12.)+5.*TT*YY/12.)+A4*TT-(A3-1.)*TT*Y*YY

E3=E33*E333

E44=AA12-AA14*TT**2+AA15*(9.*TT+A6)*(A6-TT)**9

E444=AA16*(20.*TT**19+A7)/(A7+TT**19)**2

E4=(E44+E444)*B

E55=-(12.*TT**11+A8)/(A8+TT**11)**2

E555=AA17*B+AA18*B**2+AA19*B**3

E5=E55*E555

E66=AA20*TT**18*(17.*A9+19.*TT**2)

E666=1./(A10+B)**3+A11*B

E6=E66*E666

E7=AA21*A12*B**3+21.*AA22*B**4/TT**20

E=E1+E2+E3+E4+E5+E6+E7

H=E*.00317*225.56*.001*.2388459

WRITE(*,1) V,H,T

FORMAT(3H V=,D16.9,5X,2HH=,D16.9,5X,2HT=,D16.9)

1

C

C

```

Q=1.-A1*TT**2-A2/TT**6
O=-2.*A1*TT+6.*A2/TT**7
P=-2.*A1-42.*A2/TT**8
R=Q+SQRT(A3*Q**2-2.*A4*TT+2.*A5*B)
S=O+(A3*Q*O-A4)/(SQRT(A3*Q**2-2.*A4*TT+2.*A5*B))
UU=P+A3*(O**2+Q*P)/(SQRT(A3*Q**2-2.*A4*TT+2.*A5*B))
UUU=((A3*Q*O-A4)**2)/((A3*Q**2-2.*A4*TT+2.*A5*B)**(3./2.))
U=UU-UUU
C1=-AA0/TT
CA2=2.*AA3+6.*AA4*TT+12.*AA5*TT**2+20.*AA6*TT**3
CB2=30.*AA7*TT**4+42.*AA8*TT**5+72.*AA10*TT**7+56.*AA9*TT**6
C2=CA2+CB2
CA3=(12.*R/29.-Q)
CB3=U/(R**(5./17.))-5.*S**2/(17.*R**(22./17.))
CC3=(24.*S/29.-2.*O)*S/(R**(5./17.))
CD3=(17.*U/29.-17.*P/12.)*R**(12./17.)
C3=AA11*(CA3*CB3+CC3+CD3)
CA4=2.*AA14+90.*AA15*(A6-TT)**8+722.*AA16*TT**36/(A7+TT**19)**3
CB4=-342.*AA16*TT**17/((A7+TT**19)**2)
C4=B*(CA4+CB4)
CA5=242.*TT**20/(A8+TT**11)**3-110.*TT**9/(A8+TT**11)
CB5=AA17*B+AA18*B**2+AA19*B**3
C5=-CA5*CB5
C6=-AA20*TT**16*(306.*A9+380.*TT**2)*(1./((A10+B)**3)+A11*B)
C7=420.*AA22*B**4/(TT**22)
C=C1+C2+C3+C4+C5+C6+C7
Cp=-TT*108.3275143*0.001*.2388459*C
WRITE(*,2) Cp
FORMAT(4H Cp=,D16.9)
STOP
END

```

2

B>TYPE FUR02.FOR
C SUB-REGION*2
C CANONICAL-FUNCTION
C

DOUBLE PRECISION V
BB0=16.83599274
BB01=28.56167796
BB02=-.5438923329
BB03=.4330662834
BB04=-.6547711697
BB05=.08565182058
BB11=.06670375918
BB12=1.388983801
BB21=.08390104328
BB22=.02614670893
BB23=-.03373439453
BB31=.4520918904
BB32=.1069036614
BB41=-.5975336707
BB42=-.08847535804
BB51=.5958051609
BB52=-.5159303373
BB53=.2075021122
BB61=.1190610271
BB62=-.09867174132
BB71=.1683998803
BB72=-.05809438001
BB81=.006552390126
BB82=.0005710218649
BB90=193.6587558
BB91=1388.522425
BB92=4126.607219
BB93=-6508.211677
BB94=5745.984054
BB95=-2693.088365
BB96=523.5718623
B=.7633333333
B61=.4006073948
B71=.08636081627
B81=-.8532322921
B82=.3460208861
L0=15.74373327
L1=-34.17061978
L2=19.31380707
AI1=4.260321148
K1=-1.717616747
K2=-26.08023696
K3=-168.1706546
K4=64.23285504
K5=-118.9646225
K6=4.16711732
K7=20.9750676
K8=1000000000.
K9=6.

C

C

T=305.75

C

```

TT=T/647.3
XX=EXP(B*(1.-TT))
BETL=L0+L1*TT+L2*TT**2
BEK1=K1*(1.-TT)+K2*(1.-TT)**2+K3*(1.-TT)**3
BEK2=K4*(1.-TT)**4+K5*(1.-TT)**5
BEK3=BEK1+BEK2
BEK4=TT*(1.+K6*(1.-TT)+K7*(1.-TT)**2)
BETK1=BEK3/BEK4
BETK2=(1.-TT)/(K8*(1.-TT)**2+K9)
BETK=EXP(BETK1-BETK2)
X1=A11*TT/BETK
XXX1=BB11*XX**13+BB12*XX**3+2.*BETK*BB21*XX**18
XXX2=2.*BETK*BB22*XX**2+2.*BETK*BB23*XX
X2=XXX1+XXX2
XXX3=11.*(BETK/BETL)**10
XXX4=BB90+BB91*XX+BB93*XX**3+BB94*XX**4+BB92*XX**2
XXX5=BB95*XX**5+BB96*XX**6
X3=XXX3*(XXX4+XXX5)
X=X1+X2+X3
V=X*.00317
WRITE(*,1) V
1 FORMAT(3H V=,D16.9)
STOP
END

```

*) BurnellのP.

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UNIT 3 ? FU DAT16.FOR

Xo=-.113834800D-03

X=-.115268800D-03

OMEGA= .561571900D+01

Ghem1= .212266819D+04

Ghe10= .707555985D+03

Ghem2= .223821571D+05

Ghe20= .746071823D+04

Ghne1= .192240211D+05

Ghn10= .640800636D+04

Ghne2= .171205838D+03

Ghn20= .570686065D+02

Gsel= .616817738D+03

Gsel0= .205605890D+03

Gbur1= .607437850D+04

Gbu10= .202479261D+04

AKK1=-.141280600D+04

TTc=-.354600300D-03

Gdan1= .938174137D+03

Gda10= .312724679D+03

Gwl= .586846056D+04

Gwl0= .195615331D+04

Giecl= .563673404D+04

Giel0= .187891100D+04

Stop - Program terminated.

Ahem1= .753768305D+00

Ahe10= .226130516D+01

Ahem2= .714855138D-01

Ahe20= .214456564D+00

Ahne1= .832292052D-01

Ahn10= .249687642D+00

Ahne2= .934547571D+01

Ahn20= .280364302D+02

Ase1= .259395912D+01

Ase10= .778187821D+01

Abur1= .263401433D+00

Abu10= .790204384D+00

AKK2= .161328100D+04

AAAA= .177097200D+05

Adan1= .170544032D+01

Ada10= .511632151D+01

Aw1= .272643904D+00

Aw10= .817931801D+00

Aiecl= .283852314D+00

Aiel0= .851557000D+00

FUR00

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UNIT 3 ? DAT00.FOR

Xo=-.184180700D-03

X= .340246100D-06

OMEGA= .252169000D+00

Ghem1= .170246897D+04

Ghe10= .567489595D+03

Ghem2= .199979616D+05

Ghe20= .666598648D+04

Ghne1= .217713543D+05

Ghn10= .725711730D+04

Ghne2= .552629760D+03

Ghn20= .184209900D+03

Gsel= .940981892D+03

Gsel0= .313660597D+03

Gbur1= .611354534D+04

Gbu10= .203784823D+04

AKK1= .258359000D+05

TTc= .302532300D-04

Gdan1= .305871248D+03

Gda10= .101957072D+03

Gwl= .103439840D+05

Gwl0= .344799429D+04

Giecl= .903035478D+04

Giel0= .301011800D+04

Stop - Program terminated.

Ahem1= .152719377D+01

Ahe10= .458158180D+01

Ahem2= .130013251D+00

Ahe20= .390039795D+00

Ahne1= .119422980D+00

Ahn10= .358268978D+00

Ahne2= .470477739D+01

Ahn20= .141143337D+02

Ase1= .276307124D+01

Ase10= .828921461D+01

Abur1= .425285142D+00

Abu10= .127585557D+01

AKK2=-.255696100D+05

AAAA= .158329000D+05

Adan1= .850030860D+01

Ada10= .255009286D+02

Aw1= .251353830D+00

Aw10= .754061573D+00

Aiecl= .287917813D+00

Aiel0= .863753600D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT01.FOR

Xo=-.101855800D-03

X= .263366900D-05

OMEGA= .311986800D+01

Ghem1= .136978809D+04

Ghe10= .456595982D+03

Ghem2= .172004975D+05

Ghe20= .573349853D+04

Ghnel= .183717497D+05

Ghn10= .612391591D+04

Ghne2= .212310771D+03

Ghn20= .707702494D+02

Gsel= .510603451D+03

Gsel0= .170201132D+03

Gbur1= .532810423D+04

Gbu10= .177603455D+04

AKK1= .291926400D+05

TTc= .262701700D-04

Gdan1= .257276693D+03

Gda10= .857588885D+02

Gwl= .982961601D+04

Gwl0= .327653832D+04

Giecl= .884218187D+04

Giel0= .294739400D+04

Stop - Program terminated.

Ahem1= .147468065D+01

Ahe10= .442404244D+01

Ahem2= .117438464D+00

Ahe20= .352315430D+00

Ahnel= .109951422D+00

Ahn10= .329854301D+00

Ahne2= .951435477D+01

Ahn20= .285430674D+02

Asel= .395610331D+01

Ase10= .118683112D+02

Abur1= .379121712D+00

Abu10= .113736526D+01

AKK2=-.288275000D+05

AAAA= .113507900D+05

Adan1= .785146907D+01

Ada10= .235544098D+02

Aw1= .205501415D+00

Aw10= .616504312D+00

Aiecl= .228450402D+00

Aiel0= .685351300D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT02.FOR

Xo=-.160733700D-03

X= .266152100D-07

OMEGA= .114980800D+01

Ghem1= .173022435D+04

Ghe10= .576741388D+03

Ghem2= .200062968D+05

Ghe20= .666876489D+04

Ghnel= .213470748D+05

Ghn10= .711569083D+04

Ghne2= .460446587D+03

Ghn20= .153482179D+03

Gsel= .673970213D+03

Gsel0= .224656713D+03

Gbur1= .612175467D+04

Gbu10= .204058467D+04

AKK1= .139413600D+07

TTc= .675381400D-06

Gdan1= .411870658D+02

Gda10= .137290205D+02

Gwl= .282266643D+05

Gwl0= .940888709D+04

Giecl= .249373878D+05

Giel0= .831246200D+04

Stop - Program terminated.

Ahem1= .890057986D+00

Ahe10= .267017425D+01

Ahem2= .769757649D-01

Ahe20= .230927320D+00

Ahnel= .721410317D-01

Ahn10= .216423119D+00

Ahne2= .334457903D+01

Ahn20= .100337382D+02

Asel= .228496745D+01

Ase10= .685490310D+01

Abur1= .251561862D+00

Abu10= .754685666D+00

AKK2=-.139385800D+07

AAAA= .147863200D+05

Adan1= .373903790D+02

Ada10= .112171149D+03

Aw1= .545583418D-01

Aw10= .163675043D+00

Aiecl= .617546638D-01

Aiel0= .185264000D+00

B>FUR00

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UNIT 3 ? DAT03.FOR

Xo=-.964026100D-04

X= .786743500D-07

OMEGA= .709566600D+01

Ghem1= .179484596D+04

Ghe10= .598281923D+03

Ghem2= .186689512D+05

Ghe20= .622298308D+04

Ghnel= .194373910D+05

Ghn10= .647912962D+04

Ghne2= .139969831D+03

Ghn20= .466566054D+02

Gsel= .478081191D+03

Gsel0= .159360380D+03

Gbur1= .580860511D+04

Gbu10= .193620150D+04

AKK1= .268066600D+07

TTc= .355124100D-06

Gdan1= .298109394D+02

Gda10= .993697874D+01

Gwl= .314809678D+05

Gwl0= .104936548D+05

Giecl= .302037625D+05

Gie10= .100679200D+05

Stop - Program terminated.

Ahem1= .757725191D+00

Ahe10= .227317582D+01

Ahem2= .728482271D-01

Ahe20= .218544705D+00

Ahnel= .699682381D-01

Ahn10= .209904737D+00

Ahne2= .971637951D+01

Ahn20= .291491417D+02

Asel= .284470509D+01

Ase10= .853411620D+01

Abur1= .234135386D+00

Abu10= .702406234D+00

AKK2=-.268036900D+07

AAAA= .135561500D+05

Adan1= .456208367D+02

Ada10= .136862525D+03

Aw1= .432007048D-01

Aw10= .129602129D+00

Aiecl= .450275028D-01

Aie10= .135082500D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT04.FOR

Xo=-.633457600D-04

X= .298025900D-04

OMEGA= .205565200D+02

Ghem1= .144401147D+04

Ghe10= .481337103D+03

Ghem2= .171211175D+05

Ghe20= .570703855D+04

Ghnel= .183705890D+05

Ghn10= .612352900D+04

Ghne2= .911609414D+02

Ghn20= .303869772D+02

Gsel= .469873210D+03

Gsel0= .156624386D+03

Gbur1= .537559990D+04

Gbu10= .179186644D+04

AKK1= .932763200D+04

TTc= .693871300D-04

Gdan1= .473362494D+03

Gda10= .157787481D+03

Gwl= .731129126D+04

Gwl0= .243709682D+04

Giecl= .772255821D+04

Gie10= .257418600D+04

Stop - Program terminated.

Ahem1= .367033097D+00

Ahe10= .110109941D+01

Ahem2= .309559233D-01

Ahe20= .928677799D-01

Ahnel= .288504631D-01

Ahn10= .865513987D-01

Ahne2= .581389345D+01

Ahn20= .174416822D+02

Asel= .112796386D+01

Ase10= .338389195D+01

Abur1= .985936471D-01

Abu10= .295780973D+00

AKK2=-.893532000D+04

AAAA= .107088600D+05

Adan1= .111964933D+01

Ada10= .335894836D+01

Aw1= .724906150D-01

Aw10= .217471869D+00

Aiecl= .686301075D-01

Aie10= .205890300D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT05.FOR

Xo=-.208223700D-04

X= .433606500D-04

OMEGA= .216242000D+02

Ghem1= .184259496D+04

Ghe10= .614198254D+03

Ghem2= .144682245D+05

Ghe20= .482274099D+04

Ghne1= .146194141D+05

Ghn10= .487313749D+04

Ghne2= .105482714D+03

Ghn20= .351609008D+02

Gse1= .461891451D+03

Gse10= .153963800D+03

Gbur1= .445656583D+04

Gbu10= .148552178D+04

AKK1= .149746200D+05

TTc= .483539600D-04

Gdan1= .421097794D+03

Gda10= .140365916D+03

Gw1= .642647607D+04

Gw10= .214215846D+04

Giecl= .823329586D+04

Gie10= .274443200D+04

Stop - Program terminated.

Ahem1= .407034653D+00

Ahe10= .122110409D+01

Ahem2= .518377358D-01

Ahe20= .155513224D+00

Ahne1= .513016457D-01

Ahn10= .153904954D+00

Ahne2= .711016975D+01

Ahn20= .213305116D+02

Asel= .162375813D+01

Ase10= .487127493D+01

Abur1= .168291018D+00

Abu10= .504873108D+00

AKK2=-.146665300D+05

AAAA= .132870600D+05

Adan1= .178105896D+01

Ada10= .534317746D+01

Aw1= .116704706D+00

Aw10= .350114155D+00

Aiecl= .910935321D-01

Aie10= .273280600D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT06.FOR

Xo=-.190939500D-03

X=-.513366000D-07

OMEGA= .909788600D+00

Ghem1= .193855769D+04

Ghe10= .646185826D+03

Ghem2= .211958772D+05

Ghe20= .706529163D+04

Ghne1= .226733341D+05

Ghn10= .755777722D+04

Ghne2= .428351693D+03

Ghn20= .142783882D+03

Gse1= .558402733D+03

Gse10= .186134224D+03

Gbur1= .647326985D+04

Gbu10= .215775638D+04

AKK1=-.654056900D+06

TTc=-.141823400D-05

Gdan1= .630521353D+02

Gda10= .210173762D+02

Gw1= .241233629D+05

Gw10= .804112008D+04

Giecl= .212760287D+05

Gie10= .709200900D+04

Stop - Program terminated.

Ahem1= .428153367D+00

Ahe10= .128446024D+01

Ahem2= .391585587D-01

Ahe20= .117475689D+00

Ahne1= .366068791D-01

Ahn10= .109820649D+00

Ahne2= .193766013D+01

Ahn20= .581298103D+01

Asel= .148638241D+01

Ase10= .445914771D+01

Abur1= .128219589D+00

Abu10= .384658809D+00

AKK2= .654305100D+06

AAAA= .165468700D+05

Adan1= .131637096D+02

Ada10= .394911331D+02

Aw1= .344064799D-01

Aw10= .103219451D+00

Aiecl= .390110397D-01

Aie10= .117033100D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT07.FOR

Xo=-.147620200D-03

X= .382747400D-07

OMEGA= .288755600D+01

Ghem1= .193248603D+04

Ghe10= .644161940D+03

Ghem2= .204680498D+05

Ghe20= .682268254D+04

Ghnel= .216023793D+05

Ghn10= .720079233D+04

Ghne2= .237817158D+03

Ghn20= .792723774D+02

Gsel= .547335743D+03

Gsel0= .182445228D+03

Gbur1= .630580103D+04

Gbu10= .210193345D+04

AKK1= .261555600D+07

TTc= .364514900D-06

Gdan1= .315272617D+02

Gda10= .105090861D+02

Gw1= .332323604D+05

Gw10= .110774523D+05

Giecl= .301699018D+05

Gie10= .100566300D+05

Stop - Program terminated.

Ahem1= .369989738D+00

Ahe10= .110996933D+01

Ahem2= .349324926D-01

Ahe20= .104797489D+00

Ahnel= .330982060D-01

Ahn10= .992946287D-01

Ahne2= .300651141D+01

Ahn20= .901953522D+01

Asel= .130632799D+01

Asel0= .391898439D+01

Abur1= .113387656D+00

Abu10= .340163005D+00

AKK2=-.261529100D+07

AAAA= .153680600D+05

Adan1= .226787853D+02

Ada10= .680363634D+02

Aw1= .215151735D-01

Aw10= .645455276D-01

Aiecl= .236991159D-01

Aie10= .710973600D-01

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT08.FOR

Xo=-.863709000D-04

X= .233164500D-04

OMEGA= .658820000D+01

Ghem1= .181724370D+04

Ghe10= .605747835D+03

Ghem2= .189221888D+05

Ghe20= .630739558D+04

Ghnel= .201763046D+05

Ghn10= .672543413D+04

Ghne2= .148433082D+03

Ghn20= .494776885D+02

Gsel= .481734799D+03

Gsel0= .160578249D+03

Gbur1= .593753594D+04

Gbu10= .197917843D+04

AKK1= .918058400D+04

TTc= .735563800D-04

Gdan1= .533845443D+03

Gda10= .177948462D+03

Gw1= .760435748D+04

Gw10= .253478555D+04

Giecl= .724367220D+04

Gie10= .241455700D+04

Stop - Program terminated.

Ahem1= .376944490D+00

Ahe10= .113083359D+01

Ahem2= .362008860D-01

Ahe20= .108602670D+00

Ahnel= .339507166D-01

Ahn10= .101852161D+00

Ahne2= .461487421D+01

Ahn20= .138446241D+02

Asel= .142194419D+01

Asel0= .426583304D+01

Abur1= .115367723D+00

Abu10= .346103206D+00

AKK2=-.887668100D+04

AAAA= .137422900D+05

Adan1= .128314292D+01

Ada10= .384942918D+01

Aw1= .900799313D-01

Aw10= .270239823D+00

Aiecl= .945652953D-01

Aie10= .283695900D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT08.FOR

Xo=-.863709000D-04

X= .233164500D-04

OMEGA= .658820000D+01

Ghem1= .181724370D+04

Ghe10= .605747835D+03

Ghem2= .189221888D+05

Ghe20= .630739558D+04

Ghnel= .201763046D+05

Ghn10= .672543413D+04

Ghne2= .148433082D+03

Ghn20= .494776885D+02

Gsel= .481734799D+03

Gsel0= .160578249D+03

Gbur1= .593753594D+04

Gbu10= .197917843D+04

AKK1= .918058400D+04

TTc= .735563800D-04

Gdan1= .533845443D+03

Gda10= .177948462D+03

Gwl= .760435748D+04

Gwl0= .253478555D+04

Giecl= .724367220D+04

Gie10= .241455700D+04

Stop - Program terminated.

Ahem1= .376944490D+00

Ahe10= .113083359D+01

Ahem2= .362008860D-01

Ahe20= .108602670D+00

Ahnel= .339507166D-01

Ahn10= .101852161D+00

Ahne2= .461487421D+01

Ahn20= .138446241D+02

Asel= .142194419D+01

Ase10= .426583304D+01

Abur1= .115367723D+00

Abu10= .346103206D+00

AKK2=-.887668100D+04

AAAA= .137422900D+05

Adan1= .128314292D+01

Ada10= .384942918D+01

Aw1= .900799313D-01

Aw10= .270239823D+00

Aiecl= .945652953D-01

Aie10= .283695900D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT09.FOR

Xo=-.209153500D-03

X= .632128300D-06

OMEGA= .301037300D+00

Ghem1= .187574787D+04

Ghe10= .625249224D+03

Ghem2= .211857012D+05

Ghe20= .706189963D+04

Ghnel= .228970200D+05

Ghn10= .763233916D+04

Ghne2= .798335217D+03

Ghn20= .266111710D+03

Gsel= .581936088D+03

Gsel0= .193978675D+03

Gbur1= .644118190D+04

Gbu10= .214706040D+04

AKK1= .209578000D+06

TTc= .426972400D-05

Gdan1= .111366589D+03

Gda10= .371221923D+02

Gwl= .180614327D+05

Gwl0= .602047691D+04

Giecl= .157836238D+05

Gie10= .526120800D+04

Stop - Program terminated.

Ahem1= .706918034D+00

Ahe10= .212075433D+01

Ahem2= .625893846D-01

Ahe20= .187768174D+00

Ahnel= .579114663D-01

Ahn10= .173734418D+00

Ahne2= .166095641D+01

Ahn20= .498286978D+01

Asel= .227860074D+01

Ase10= .683580296D+01

Abur1= .205862840D+00

Abu10= .617588587D+00

AKK2=-.209334600D+06

AAAA= .171004000D+05

Adan1= .119066231D+02

Ada10= .357198732D+02

Aw1= .734161029D-01

Aw10= .220248333D+00

Aiecl= .840111255D-01

Aie10= .252033400D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT10.FOR

Xo=-.150240400D-03

X= .357518700D-07

OMEGA= .253894100D+01

Ghem1= .186473382D+04

Ghe10= .621577873D+03

Ghem2= .202622181D+05

Ghe20= .675407196D+04

Ghnel= .214442456D+05

Ghn10= .714808108D+04

Ghne2= .252982311D+03

Ghn20= .843274278D+02

Gsel= .549512212D+03

Gsel0= .183170717D+03

Gbur1= .623391471D+04

Gbul0= .207797134D+04

AKK1= .423871500D+07

TTc= .226486800D-06

Gdan1= .243583225D+02

Gda10= .811943994D+01

Gwl= .373767212D+05

Gwl0= .124589057D+05

Giecl= .337143657D+05

Giel0= .112381200D+05

Stop - Program terminated.

Ahem1= .506774741D+00

Ahe10= .152032439D+01

Ahem2= .466385268D-01

Ahe20= .139915595D+00

Ahnel= .440677662D-01

Ahn10= .132203313D+00

Ahne2= .373543904D+01

Ahn20= .112063183D+02

Asel= .171970701D+01

Asel0= .515912157D+01

Abur1= .151590139D+00

Abul0= .454770468D+00

AKK2=-.423844400D+07

AAAA= .150202000D+05

Adan1= .387957751D+02

Ada10= .116387338D+03

Aw1= .252831166D-01

Aw10= .758493579D-01

Aiecl= .280295945D-01

Aiel0= .840887900D-01

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT11.FOR

Xo=-.598218200D-04

X= .794909900D-05

OMEGA= .637247500D+01

Ghem1= .196599696D+04

Ghe10= .655332250D+03

Ghem2= .195333781D+05

Ghe20= .651112533D+04

Ghnel= .202587008D+05

Ghn10= .675289955D+04

Ghne2= .160268823D+03

Ghn20= .534229352D+02

Gsel= .516110856D+03

Gsel0= .172036933D+03

Gbur1= .615022305D+04

Gbul0= .205007413D+04

AKK1= .195384300D+05

TTc= .387813600D-04

Gdan1= .374393353D+03

Gda10= .124797771D+03

Gwl= .940569473D+04

Gwl0= .313523124D+04

Giecl= .899726162D+04

Giel0= .299908700D+04

Stop - Program terminated.

Ahem1= .361648575D+00

Ahe10= .108494584D+01

Ahem2= .363992340D-01

Ahe20= .109197714D+00

Ahnel= .350960314D-01

Ahn10= .105288105D+00

Ahne2= .443629639D+01

Ahn20= .133088906D+02

Asel= .137761101D+01

Asel0= .413283349D+01

Abur1= .115605563D+00

Abul0= .346816727D+00

AKK2=-.192644800D+05

AAAA= .149266800D+05

Adan1= .189907218D+01

Ada10= .569721715D+01

Aw1= .755925023D-01

Aw10= .226777531D+00

Aiecl= .790240442D-01

Aiel0= .237072200D+00

B>FUR00

File name missing or blank - try again!

```

Xo=-.620566600D-04
X= .308434800D-04
OMEGA= .130814800D+02
Ghem1= .183204732D+04      Ahem1= .322589920D+00
Ghe10= .610682375D+03      Ahe10= .967769865D+00
Ghem2= .169220037D+05      Ahem2= .349249420D-01
Ghe20= .564066731D+04      Ahe20= .104774837D+00
Ghne1= .182573268D+05      Ahne1= .323705659D-01
Ghn10= .608577494D+04      Ahn10= .971117082D-01
Ghne2= .116128629D+03      Ahne2= .508918435D+01
Ghn20= .387095388D+02      Ahn20= .152675547D+02
Gsel= .474520623D+03       Ase1= .124546747D+01
Gsel0= .158173524D+03      Ase10= .373640281D+01
Gbur1= .536222583D+04      Abur1= .110215425D+00
Gbu10= .178740842D+04      Abu10= .330646311D+00
AKK1= .566611200D+04      AKK2=-.535238100D+04      AAAA= .135812700D+05
TTc= .107930900D-03
Gdan1= .685100029D+03      Adan1= .862647753D+00
Gda10= .228366652D+03      Ada10= .258794354D+01
Gwl= .606222643D+04       Awl= .974889352D-01
Gwl0= .202074193D+04      Awl0= .292466837D+00
Giecl= .643361421D+04      Aiecl= .918612743D-01
Giel0= .214453800D+04      Aiel0= .275583900D+00
Stop - Program terminated.

```

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT13.FOR

Xo=-.150494700D-03

X= .343802500D-07

```

OMEGA= .844259100D+00
Ghem1= .159177955D+04      Ahem1= .165537999D+01
Ghe10= .530593124D+03      Ahe10= .496614049D+01
Ghem2= .511827688D+03      Ahem2= .514821699D+01
Ghe20= .170609211D+03      Ahe20= .154446526D+02
Ghne1= .546804776D+03      Ahne1= .481890451D+01
Ghn10= .182268239D+03      Ahn10= .144567151D+02
Ghne2= .403273199D+03      Ahne2= .653403204D+01
Ghn20= .134424385D+03      Ahn20= .196020982D+02
Gsel= .511529172D+03       Ase1= .515122137D+01
Gsel0= .170509705D+03      Ase10= .154536658D+02
Gbur1= .588305395D+04      Abur1= .447896623D+00
Gbu10= .196101777D+04      Abu10= .134369002D+01
AKK1= .873553100D+06      AKK2=-.873552900D+06      AAAA= .139629300D+05
TTc= .113789600D-05
Gdan1= .132716760D+01      Adan1= .198543123D+04
Gda10= .442389151D+00      Ada10= .595629435D+04
Gwl= .151113756D+06       Awl= .174371948D-01
Gwl0= .503712466D+05      Awl0= .523115900D-01
Giecl= .132859560D+06      Aiecl= .198329725D-01
Giel0= .442865200D+05      Aiel0= .594989200D-01
Stop - Program terminated.

```

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAR T12.FOR

Xo=-.620566600D-04

X= .308434800D-04

OMEGA= .130814800D+02

Ghem1= .183204732D+04

Ghe10= .610682375D+03

Ghem2= .169220037D+05

Ghe20= .564066731D+04

Ghne1= .182573268D+05

Ghn10= .608577494D+04

Ghne2= .116128629D+03

Ghn20= .387095388D+02

Gsel= .474520623D+03

Gsel0= .158173524D+03

Gbur1= .536222583D+04

Gbul0= .178740842D+04

AKK1= .566611200D+04

TTc= .107930900D-03

Gdan1= .685100029D+03

Gda10= .228366652D+03

Gwl= .606222643D+04

Gwl0= .202074193D+04

Giecl= .643361421D+04

Gie10= .214453800D+04

Stop - Program terminated.

Ahem1= .322589920D+00

Ahe10= .967769865D+00

Ahem2= .349249420D-01

Ahe20= .104774837D+00

Ahne1= .323705659D-01

Ahn10= .971117082D-01

Ahne2= .508918435D+01

Ahn20= .152675547D+02

Asel= .124546747D+01

Asel0= .373640281D+01

Abur1= .110215425D+00

Abul0= .330646311D+00

AKK2=-.535238100D+04

AAAA= .135812700D+05

Adan1= .862647753D+00

Ada10= .258794354D+01

Aw1= .974889352D-01

Aw10= .292466837D+00

Aiecl= .918612743D-01

Aie10= .275583900D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT14.FOR

Xo=-.765942000D-04

X=-.265609300D-04

OMEGA= .530433300D+01

Ghem1= .132798906D+04

Ghe10= .442662972D+03

Ghem2= .173251166D+05

Ghe20= .577503824D+04

Ghne1= .165353163D+05

Ghn10= .551177151D+04

Ghne2= .221178022D+03

Ghn20= .737259995D+02

Gsel= .706339469D+03

Gsel0= .235446464D+03

Gbur1= .506604669D+04

Gbul0= .168868205D+04

AKK1=-.410638900D+04

TTc=-.137942100D-03

Gdan1= .503308187D+03

Gda10= .167769378D+03

Gwl= .668215090D+04

Gwl0= .222738339D+04

Giecl= .614587904D+04

Gie10= .204862600D+04

Stop - Program terminated.

Ahem1= .121235939D+01

Ahe10= .363707855D+01

Ahem2= .929286676D-01

Ahe20= .278786033D+00

Ahne1= .973673542D-01

Ahn10= .292102094D+00

Ahne2= .727920425D+01

Ahn20= .218376151D+02

Asel= .227935726D+01

Asel0= .683807253D+01

Abur1= .317802046D+00

Abul0= .953406240D+00

AKK2= .447073500D+04

AAAA= .104660600D+05

Adan1= .319883531D+01

Ada10= .959650696D+01

Aw1= .240940383D+00

Aw10= .722821228D+00

Aiecl= .261964154D+00

Aie10= .785892500D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT15.FOR

Xo=-.440170900D-04

X= .120210100D-06

OMEGA= .123058500D+02

Ghem1= .118648764D+04

Ghe10= .395495836D+03

Ghem2= .143476855D+05

Ghe20= .478256131D+04

Ghnel= .147841985D+05

Ghn10= .492806563D+04

Ghne2= .126195500D+03

Ghn20= .420651622D+02

Gsel= .552891667D+03

Gsel0= .184297202D+03

Gbur1= .445446351D+04

Gbul0= .148482101D+04

AKK1= .207562900D+07

TTc= .452904200D-06

Gdan1= .278322108D+02

Gda10= .927740258D+01

Gwl= .249853578D+05

Gwl0= .832845171D+04

Giecl= .246101296D+05

Giel0= .820337600D+04

Stop - Program terminated.

Ahem1= .120102389D+01

Ahe10= .360307207D+01

Ahem2= .993191551D-01

Ahe20= .297957497D+00

Ahnel= .963866929D-01

Ahn10= .289160110D+00

Ahne2= .112920032D+02

Ahn20= .338760134D+02

Asel= .257735843D+01

Ase10= .773207613D+01

Abur1= .319903844D+00

Abul0= .959711637D+00

AKK2=-.207518200D+07

AAAA= .916296500D+04

Adan1= .511996698D+02

Ada10= .153599026D+03

Aw1= .570334037D-01

Aw10= .171100230D+00

Aiecl= .579029863D-01

Aiel0= .173709000D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT17.FOR

Xo=-.241221900D-04

X= .349687400D-04

OMEGA= .220678400D+02

Ghem1= .152547978D+04

Ghe10= .508493204D+03

Ghem2= .140849035D+05

Ghe20= .469496732D+04

Ghnel= .144118668D+05

Ghn10= .480395507D+04

Ghne2= .841287363D+02

Ghn20= .280429091D+02

Gsel= .402540836D+03

Gsel0= .134180264D+03

Gbur1= .437629276D+04

Gbul0= .145876410D+04

AKK1= .159404700D+05

TTc= .447436400D-04

Gdan1= .371236081D+03

Gda10= .123745347D+03

Gwl= .672117703D+04

Gwl0= .224039210D+04

Giecl= .796346123D+04

Giel0= .265448700D+04

Stop - Program terminated.

Ahem1= .727639932D+00

Ahe10= .218292003D+01

Ahem2= .788077817D-01

Ahe20= .236423371D+00

Ahnel= .770198627D-01

Ahn10= .231059613D+00

Ahne2= .131940648D+02

Ahn20= .395821987D+02

Asel= .275748421D+01

Ase10= .827245353D+01

Abur1= .253639338D+00

Abul0= .760918096D+00

AKK2=-.155732200D+05

AAAA= .112224000D+05

Adan1= .299001109D+01

Ada10= .897003425D+01

Aw1= .165149645D+00

Aw10= .495448989D+00

Aiecl= .139386627D+00

Aiel0= .418159900D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT18.FOR

Xo=-.882350500D-04

X= .262827700D-06

OMEGA= .584458300D+01

Ghem1= .153776852D+04

Ghe10= .512589451D+03

Ghem2= .174134539D+05

Ghe20= .580448400D+04

Ghnel= .181804164D+05

Ghn10= .606013815D+04

Ghne2= .139828484D+03

Ghn20= .466094897D+02

Gsel= .445246908D+03

Gsel0= .148415620D+03

Gbur1= .543867398D+04

Gbu10= .181289113D+04

AKK1= .576767900D+06

TTc= .158956400D-05

Gdan1= .595329373D+02

Gda10= .198443103D+02

Gw1= .208582760D+05

Gw10= .695275793D+04

Giecl= .194768978D+05

Giel0= .649229800D+04

Stop - Program terminated.

Ahem1= .851883741D+00

Ahe10= .255565150D+01

Ahem2= .752291882D-01

Ahe20= .225687589D+00

Ahnel= .720555552D-01

Ahn10= .216166689D+00

Ahne2= .936862048D+01

Ahn20= .281058645D+02

Ase1= .294218776D+01

Ase10= .882656422D+01

Abur1= .240867536D+00

Abu10= .722602686D+00

AKK2=-.576436000D+06

AAAA= .120499000D+05

Adan1= .220046257D+02

Ada10= .660138842D+02

Aw1= .628048069D-01

Aw10= .188414441D+00

Aiecl= .672591710D-01

Aiel0= .201777500D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

Xo=-.720964800D-04

X= .255023600D-06

OMEGA= .784783600D+01

Ghem1= .136835375D+04

Ghe10= .456117867D+03

Ghem2= .164224082D+05

Ghe20= .547413549D+04

Ghnel= .170996398D+05

Ghn10= .569987932D+04

Ghne2= .195162845D+03

Ghn20= .650542746D+02

Gsel= .710489916D+03

Gsel0= .236829947D+03

Gbur1= .510053657D+04

Gbu10= .170017867D+04

AKK1= .713254400D+06

TTc= .128838300D-05

Gdan1= .508296618D+02

Gda10= .169432188D+02

Gw1= .211700218D+05

Gw10= .705667317D+04

Giecl= .200353530D+05

Giel0= .667845000D+04

Stop - Program terminated.

Ahem1= .121313659D+01

Ahe10= .363941016D+01

Ahem2= .101081399D+00

Ahe20= .303244230D+00

Ahnel= .970780683D-01

Ahn10= .291234236D+00

Ahne2= .850571737D+01

Ahn20= .255171549D+02

Ase1= .233641599D+01

Ase10= .700924872D+01

Abur1= .325455955D+00

Abu10= .976367970D+00

AKK2=-.712874800D+06

AAAA= .106817400D+05

Adan1= .326580965D+02

Ada10= .979743001D+02

Aw1= .784127676D-01

Aw10= .235238328D+00

Aiecl= .828535440D-01

Aiel0= .248560700D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

Xo=-.720964800D-04

X= .255023600D-06

OMEGA= .784783600D+01

Ghem1= .136835375D+04

Ghe10= .456117867D+03

Ghem2= .164224082D+05

Ghe20= .547413549D+04

Ghne1= .170996398D+05

Ghn10= .569987932D+04

Ghne2= .195162845D+03

Ghn20= .650542746D+02

Gsel= .710489916D+03

Gsel0= .236829947D+03

Gbur1= .510053657D+04

Gbu10= .170017867D+04

AKK1= .713254400D+06

TTc= .128838300D-05

Gdan1= .508296618D+02

Gda10= .169432188D+02

Gw1= .211700218D+05

Gw10= .705667317D+04

Giecl= .200353530D+05

Giel0= .667845000D+04

Stop - Program terminated.

Ahem1= .121313659D+01

Ahe10= .363941016D+01

Ahem2= .101081399D+00

Ahe20= .303244230D+00

Ahne1= .970780683D-01

Ahn10= .291234236D+00

Ahne2= .850571737D+01

Ahn20= .255171549D+02

Ase1= .233641599D+01

Ase10= .700924872D+01

Abur1= .325455955D+00

Abu10= .976367970D+00

AKK2=-.712874800D+06

AAAA= .106817400D+05

Adan1= .326580965D+02

Ada10= .979743001D+02

Aw1= .784127676D-01

Aw10= .235238328D+00

Aiecl= .828535440D-01

Aie10= .248560700D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT19.FOR

Xo=-.720964800D-04

X= .255023600D-06

OMEGA= .784783600D+01

Ghem1= .136835375D+04

Ghe10= .456117867D+03

Ghem2= .164224082D+05

Ghe20= .547413549D+04

Ghne1= .170996398D+05

Ghn10= .569987932D+04

Ghne2= .195162845D+03

Ghn20= .650542746D+02

Gsel= .710489916D+03

Gsel0= .236829947D+03

Gbur1= .510053657D+04

Gbu10= .170017867D+04

AKK1= .713254400D+06

TTc= .128838300D-05

Gdan1= .508296618D+02

Gda10= .169432188D+02

Gw1= .211700218D+05

Gw10= .705667317D+04

Giecl= .200353530D+05

Giel0= .667845000D+04

Stop - Program terminated.

Ahem1= .121313659D+01

Ahe10= .363941016D+01

Ahem2= .101081399D+00

Ahe20= .303244230D+00

Ahne1= .970780683D-01

Ahn10= .291234236D+00

Ahne2= .850571737D+01

Ahn20= .255171549D+02

Ase1= .233641599D+01

Ase10= .700924872D+01

Abur1= .325455955D+00

Abu10= .976367970D+00

AKK2=-.712874800D+06

AAAA= .106817400D+05

Adan1= .326580965D+02

Ada10= .979743001D+02

Aw1= .784127676D-01

Aw10= .235238328D+00

Aiecl= .828535440D-01

Aie10= .248560700D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT20.FOR

Xo=-.412997100D-04

X= .121749600D-06

OMEGA= .102674300D+02

Ghem1= .966605324D+03

Ghe10= .322201740D+03

Ghem2= .134111757D+05

Ghe20= .447039142D+04

Ghnel= .138715135D+05

Ghn10= .462383732D+04

Ghne2= .808490478D+02

Ghn20= .269496797D+02

Gsel= .337079597D+03

Gse10= .112359854D+03

Gbur1= .417840607D+04

Gbul0= .139280187D+04

AKK1= .144370200D+07

TTc= .643229200D-06

Gdan1= .300889076D+02

Gda10= .100296348D+02

Gwl= .225409130D+05

Gwl0= .751363685D+04

Giecl= .213110407D+05

Giel0= .710368000D+04

Stop - Program terminated.

Ahem1= .244153424D+01

Ahe10= .732460352D+01

Ahem2= .175972640D+00

Ahe20= .527917978D+00

Ahnel= .170132841D+00

Ahn10= .510398579D+00

Ahne2= .291902015D+02

Ahn20= .875706141D+02

Asel= .700131369D+01

Asel0= .210039433D+02

Abur1= .564808676D+00

Abul0= .169442621D+01

AKK2=-.144317700D+07

AAAA= .775917400D+04

Adan1= .784342200D+02

Ada10= .235302685D+03

Aw1= .104698510D+00

Aw10= .314095564D+00

Aiecl= .110740720D+00

Aiel0= .332222200D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT21.FOR

Xo=-.270153500D-04

X= .288788400D-06

OMEGA= .221316400D+02

Ghem1= .103587848D+04

Ghe10= .345292788D+03

Ghem2= .123980316D+05

Ghe20= .413267676D+04

Ghnel= .126919462D+05

Ghn10= .423064827D+04

Ghne2= .829211365D+02

Ghn20= .276403759D+02

Gsel= .450059360D+03

Gse10= .150019770D+03

Gbur1= .389085975D+04

Gbul0= .129695311D+04

AKK1= .130483800D+07

TTc= .710246400D-06

Gdan1= .325340867D+02

Gda10= .108446944D+02

Gwl= .201855380D+05

Gwl0= .672851193D+04

Giecl= .215202200D+05

Giel0= .717340600D+04

Stop - Program terminated.

Ahem1= .121635890D+01

Ahe10= .364907709D+01

Ahem2= .101629036D+00

Ahe20= .304887141D+00

Ahnel= .992755550D-01

Ahn10= .297826697D+00

Ahne2= .151951608D+02

Ahn20= .455854872D+02

Asel= .279963070D+01

Asel0= .839889301D+01

Abur1= .323835882D+00

Abul0= .971507751D+00

AKK2=-.130432600D+07

AAAA= .786017900D+04

Adan1= .387286114D+02

Ada10= .116185847D+03

Aw1= .624209274D-01

Aw10= .187262802D+00

Aiecl= .585495872D-01

Aiel0= .175648800D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT21.FOR

Xo=-.270153500D-04

X= .288788400D-06

OMEGA= .221316400D+02

Ghem1= .103587848D+04

Ghe10= .345292788D+03

Ghem2= .123980316D+05

Ghe20= .413267676D+04

Ghnel= .126919462D+05

Ghn10= .423064827D+04

Ghne2= .829211365D+02

Ghn20= .276403759D+02

Gsel= .450059360D+03

Gsel0= .150019770D+03

Gbur1= .389085975D+04

Gbu10= .129695311D+04

AKK1= .130483800D+07

TTc= .710246400D-06

Gdan1= .325340867D+02

Gda10= .108446944D+02

Gwl= .201855380D+05

Gwl0= .672851193D+04

Giecl= .215202200D+05

Giel0= .717340600D+04

Stop - Program terminated.

Ahem1= .121635890D+01

Ahe10= .364907709D+01

Ahem2= .101629036D+00

Ahe20= .304887141D+00

Ahnel= .992755550D-01

Ahn10= .297826697D+00

Ahne2= .151951608D+02

Ahn20= .455854872D+02

Asel= .279963070D+01

Asel0= .839889301D+01

Abur1= .323835882D+00

Abu10= .971507751D+00

AKK2=-.130432600D+07

AAAA= .786017900D+04

Adan1= .387286114D+02

Ada10= .116185847D+03

Aw1= .624209274D-01

Aw10= .187262802D+00

Aiecl= .585495872D-01

Aiel0= .175648800D+00

B>FUR00

File name missing or blank - try again!

UNIT 3 ? DAT22.FOR

Xo=-.459328500D-04

X= .155502900D-04

OMEGA= .521017900D-02

Ghem1= .149536488D+04

Ghe10= .498454906D+03

Ghem2= .176279562D+05

Ghe20= .587598475D+04

Ghnel= .183064616D+05

Ghn10= .610215319D+04

Ghne2= .599974914D+03

Ghn20= .199991616D+03

Gsel= .446947534D+03

Gsel0= .148982495D+03

Gbur1= .554160635D+04

Gbu10= .184720192D+04

AKK1= .196248300D+05

TTc= .374004800D-04

Gdan1= .328053220D+03

Gda10= .109351062D+03

Gwl= .905373046D+04

Gwl0= .301790983D+04

Giecl= .787722659D+04

Giel0= .262574200D+04

Stop - Program terminated.

Ahem1= .983037666D+00

Ahe10= .294911332D+01

Ahem2= .833902686D-01

Ahe20= .250170833D+00

Ahnel= .802995158D-01

Ahn10= .240898574D+00

Ahne2= .245010244D+01

Ahn20= .735030811D+01

Asel= .328897664D+01

Asel0= .986693099D+01

Abur1= .265266045D+00

Abu10= .795798221D+00

AKK2=-.192622100D+05

AAAA= .113398100D+05

Adan1= .448098025D+01

Ada10= .134429422D+02

Aw1= .162364012D+00

Aw10= .487092088D+00

Aiecl= .186613903D+00

Aiel0= .559841800D+00

部分領域[II]の物性値を用いた計算値

```

FUR05
T(I)= .305750000D+03      P(I)= .300900000D+01
V= .446630574D+00
T(I)= .344720000D+03      P(I)= .145900000D+01
V= .115328231D+01
T(I)= .334550000D+03      P(I)= .182800000D+01
V= .879582495D+00
T(I)= .381050000D+03      P(I)= .119800000D+01
V= .157761400D+01
T(I)= .379850000D+03      P(I)= .132880000D+01
V= .141494622D+01
T(I)= .388150000D+03      P(I)= .184870000D+01
V= .103427458D+01
T(I)= .335000000D+03      P(I)= .114060000D+01
V= .143874473D+01
T(I)= .360650000D+03      P(I)= .125070000D+01
V= .142197840D+01
T(I)= .373650000D+03      P(I)= .114055000D+01
V= .162373959D+01
T(I)= .312150000D+03      P(I)= .115100000D+01
V= .131225933D+01
T(I)= .355850000D+03      P(I)= .127116000D+01
V= .137789095D+01
T(I)= .376750000D+03      P(I)= .125050000D+01
V= .149187541D+01
T(I)= .379750000D+03      P(I)= .137102000D+01
V= .137017713D+01
T(I)= .325450000D+03      P(I)= .113000000D+01
V= .140514358D+01
T(I)= .355850000D+03      P(I)= .301500000D+01
V= .560018390D+00
T(I)= .372250000D+03      P(I)= .263500000D+01
V= .683357971D+00
T(I)= .380650000D+03      P(I)= .153000000D+01
V= .122827001D+01
T(I)= .381750000D+03      P(I)= .146710000D+01
V= .128610461D+01
T(I)= .366450000D+03      P(I)= .114590000D+01
V= .158228745D+01
T(I)= .367950000D+03      P(I)= .321500000D+01
V= .546268534D+00
T(I)= .357250000D+03      P(I)= .109900000D+01
V= .160591937D+01
T(I)= .379250000D+03      P(I)= .235500000D+01
V= .785226191D+00
T(I)= .374850000D+03      P(I)= .114640000D+01
V= .162091466D+01
? Error: Operation error in file DAT300.FOR
Error Code 1298, Status 0003
PC = 0174: E9AE; SS = 17AF, FP = 00DE, SP = E9B0

```

```
B>TYPE FUR05.FOR
C      STEAM TABLE
C      SUBRESION*2      (v)
C
C      DOUBLE PRECISION V,T,P
C      DIMENSION T(30),P(30)
C      REAL KAI
C      L0=15.74373327
C      L1=-34.17061061978
C      L2=19.31380707
C      BB0=16.83599274
C      BB01=28.56067796
C      BB02=-54.38923329
C      BB03=.4330662834
C      BB04=-.6547711697
C      BB05=.08565182058
C      BB11=.06670375918
C      BB12=1.388983801
C      BB21=.08390104328
C      BB22=.02614670893
C      BB23=-.03373439453
C      BB31=.4520918904
C      BB32=.1069036614
C      BB41=-.5975336707
C      BB42=-.08847535804
C      BB51=.5958051609
C      BB52=-.5159303373
C      BB53=.2075021122
C      BB61=.1190610271
C      BB62=-.09867174132
C      BB71=.1683998803
C      BB72=-.05809438001
C      BB81=.006552390126
C      BB82=.0005710218649
C      BB90=193.6587558
C      BB91=-1388.522425
C      BB92=4126.607219
C      BB93=-6508.211677
C      BB94=5745.984054
C      BB95=-2693.088365
C      BB96=523.5718623
C      B=.7633333333
C      B61=.4006073948
C      B71=.08636081627
C      B81=-.8532322921
C      B82=.3460208861
```

C

```

OPEN(3,FILE='DAT300.FOR')
OPEN(5,FILE='DAT301.FOR')
DO 1 I=1,23
DO 1 J=1,23
READ(3,*) T(I)
READ(5,*) P(J)
WRITE(*,4) T(I),P(J)
4 FORMAT(6H T(I)=,D16.9,5X,5HP(I)=,D16.9)
TT=T(I)/647.3
XX=EXP(B*(1.-TT))
BETA=P(J)/225.56
BETAL=LO+L1*TT+L2*TT**2
F1=1.
F2=2.*BETA
F3=3.*BETA**2
F4=4.*BETA**3
F5=5.*BETA**4
F=F1+F2+F3+F4+F5
G1=BB11*XX**13
G2=BB12*XX**3
G3=BB21*XX**18
G4=BB22*XX**2
G5=BB23*XX
G6=BB31*XX**18
G7=BB32*XX**10
G8=BB41*XX**25
G9=BB42*XX**14
G10=BB51*XX**32
G11=BB52*XX**28
G12=BB53*XX**24
G=G1+G2+G3+G4+G5+G6+G7+G8+G9+G10+G11+G12
O1=F1*(G1+G2)
O2=F2*(G3+G4+G5)
O3=F3*(G6+G7)
O4=F4*(G8+G9)
O5=F5*(G10+G11+G12)
O=O1+O2+O3+O4+O5
PP1=4.*BB11*XX**12/(BETA**5*(1./BETA**4+B61*XX**14)**2)
PP2=4.*BB62*XX**11/(BETA**5*(1./BETA**4+B61*XX**14)**2)
PP3=5.*BB71*XX**24/(BETA**6*(1./BETA**5+B71*XX**19)**2)
PP4=5.*BB72*XX**18/(BETA**6*(1./BETA**5+B71*XX**19)**2)
PP5=6.*BB81*XX**24/(BETA**7*(1./BETA**6+B81*XX**54)**2)
PP6=6.*BB81*XX**24/(BETA**7*(1./BETA**6+B82*XX**27)**2)
PP7=6.*BB82*XX**14/(BETA**7*(1./BETA**6+B81*XX**54)**2)
PP8=6.*BB82*XX**14/(BETA**7*(1./BETA**6+B82*XX**27)**2)
PP=PP1+PP2+PP3+PP4+PP5+PP6+PP7+PP8

```

```

      Q1=BB90
      Q2=BB91*XX
      Q3=BB92*XX**2
      Q4=BB93*XX**3
      Q5=BB94*XX**4
      Q6=BB95*XX**5
      Q7=BB96*XX**6
      Q=Q1+Q2+Q3+Q4+Q5+Q6+Q7
      KAI=4.560321148*TT/BETA-O-PP+Q*(11.*BETA/BETAL)**10
      V=KAI*.00317
      WRITE(*,2) V
2     FORMAT(3H V=,D16.9)
1     CONTINUE
      STOP
      END

```

*) IECのP。

le name missing or blank - try again!

UNIT 3 ? dat00.for

Xo=-.184180700D-03

X= .340246100D-06

OMEGA= .252169000D+00

Ghem1= .282382431D+04

Ghe10= .941274668D+03

Ghem2= .199523279D+05

Ghe20= .665077524D+04

Ghne1= .217251483D+05

Ghn10= .724171530D+04

Ghne2= .755960274D+03

Ghn20= .251986731D+03

Gsel= .938834627D+03

Gsel0= .312944842D+03

Gbur1= .611354534D+04

Gbul0= .203784823D+04

AKK1= .258359000D+05

TTc= .302532300D-04

Gdan1= .305871248D+03

Gda10= .101957072D+03

Gwl= .103203801D+05

Gwl0= .344012632D+04

Giecl= .897873088D+04

Giel0= .299291000D+04

Stop - Program terminated.

Ahem1= .920737169D+00

Ahe10= .276221181D+01

Ahem2= .130310609D+00

Ahe20= .390931870D+00

Ahne1= .119676974D+00

Ahn10= .359030960D+00

Ahne2= .343933417D+01

Ahn20= .103180036D+02

Ase1= .276939082D+01

Ase10= .830817337D+01

Abur1= .425285142D+00

Abul0= .127585557D+01

AKK2=-.255696100D+05

AAAA= .158329000D+05

Adan1= .850030860D+01

Ada10= .255009286D+02

Aw1= .251928706D+00

Aw10= .755786200D+00

Aiecl= .289573219D+00

Aiel0= .868719800D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat01.for

Xo=-.101855800D-03

X= .263366900D-05

OMEGA= .311986800D+01

Ghem1= .213447940D+04

Ghe10= .711493058D+03

Ghem2= .168656514D+05

Ghe20= .562188319D+04

Ghnel= .180329650D+05

Ghn10= .601098767D+04

Ghne2= .212231219D+03

Ghn20= .707437319D+02

Gsel= .500663409D+03

Gsel0= .166887785D+03

Gbur1= .532810423D+04

Gbu10= .177603455D+04

AKK1= .291926400D+05

TTc= .262701700D-04

Gdan1= .257276693D+03

Gda10= .857588885D+02

Gw1= .963823693D+04

Gw10= .321274530D+04

Giecl= .838526639D+04

Gie10= .279508800D+04

Stop - Program terminated.

Ahem1= .946366592D+00

Ahe10= .283910008D+01

Ahem2= .119770055D+00

Ahe20= .359310205D+00

Ahnel= .112017076D+00

Ahn10= .336051263D+00

Ahne2= .951792112D+01

Ahn20= .285537665D+02

Asel= .403464676D+01

Asel0= .121039416D+02

Abur1= .379121712D+00

Abu10= .113736526D+01

AKK2=-.288275000D+05

AAAA= .113507900D+05

Adan1= .785146907D+01

Ada10= .235544098D+02

Aw1= .209581899D+00

Aw10= .628745765D+00

Aiecl= .240898727D+00

Aie10= .722696300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat02.for

Xo=-.160733700D-03

X= .266152100D-07

OMEGA= .114980800D+01

Ghem1= .274149319D+04

Ghe10= .913830964D+03

Ghem2= .198230254D+05

Ghe20= .660767442D+04

Ghnel= .211636148D+05

Ghn10= .705453752D+04

Ghne2= .457023116D+03

Ghn20= .152341022D+03

Gsel= .667796174D+03

Gsel0= .222598701D+03

Gbur1= .612175467D+04

Gbu10= .204058467D+04

AKK1= .139413600D+07

TTc= .675381400D-06

Gdan1= .411870658D+02

Gda10= .137290205D+02

Gw1= .279680890D+05

Gw10= .932269532D+04

Giecl= .243322365D+05

Gie10= .811074500D+04

Stop - Program terminated.

Ahem1= .561737672D+00

Ahe10= .168521320D+01

Ahem2= .776874351D-01

Ahe20= .233062331D+00

Ahnel= .727663970D-01

Ahn10= .218299215D+00

Ahne2= .336963262D+01

Ahn20= .101088990D+02

Asel= .230609288D+01

Asel0= .691827938D+01

Abur1= .251561862D+00

Abu10= .754685666D+00

AKK2=-.139385800D+07

AAAA= .147863200D+05

Adan1= .373903790D+02

Ada10= .112171149D+03

Aw1= .550627539D-01

Aw10= .165188279D+00

Aiecl= .632905241D-01

Aie10= .189871600D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat03.for

Xo=-.964026100D-04

X= .786743500D-07

OMEGA= .709566600D+01

Ghem1= .263568893D+04

Ghe10= .878562881D+03

Ghem2= .176985040D+05

Ghe20= .589950070D+04

Ghnel= .184709767D+05

Ghn10= .615699156D+04

Ghne2= .139968264D+03

Ghn20= .466560829D+02

Gsel= .453229635D+03

Gsel0= .151076529D+03

Gbur1= .580860511D+04

Gbu10= .193620150D+04

AKK1= .268066600D+07

TTc= .355124100D-06

Gdan1= .298109394D+02

Gda10= .993697874D+01

Gwl= .298445288D+05

Gwl0= .994817520D+04

Giecl= .259647409D+05

Giel0= .865491300D+04

Stop - Program terminated.

Ahem1= .515994124D+00

Ahe10= .154798254D+01

Ahem2= .768426529D-01

Ahe20= .230527984D+00

Ahnel= .736290248D-01

Ahn10= .220887098D+00

Ahne2= .971648832D+01

Ahn20= .291494681D+02

Asel= .300068640D+01

Asel0= .900206017D+01

Abur1= .234135386D+00

Abu10= .702406234D+00

AKK2=-.268036900D+07

AAAA= .135561500D+05

Adan1= .456208367D+02

Ada10= .136862525D+03

Aw1= .455694914D-01

Aw10= .136708489D+00

Aiecl= .523787242D-01

Aiel0= .157136200D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat04.for

Xo=-.633457600D-04

X= .298025900D-04

OMEGA= .205565200D+02

Ghem1= .210563667D+04

Ghe10= .701878815D+03

Ghem2= .151792185D+05

Ghe20= .505973895D+04

Ghnel= .163444570D+05

Ghn10= .544815174D+04

Ghne2= .911607941D+02

Ghn20= .303869281D+02

Gsel= .416579609D+03

Gsel0= .138859855D+03

Gbur1= .537559990D+04

Gbu10= .179186644D+04

AKK1= .932763200D+04

TTc= .693871300D-04

Gdan1= .473362494D+03

Gda10= .157787481D+03

Gwl= .646883158D+04

Gwl0= .215627696D+04

Giecl= .562788341D+04

Giel0= .187596100D+04

Stop - Program terminated.

Ahem1= .251705342D+00

Ahe10= .755116109D+00

Ahem2= .349161586D-01

Ahe20= .104748487D+00

Ahnel= .324268956D-01

Ahn10= .972806972D-01

Ahne2= .581390284D+01

Ahn20= .174417104D+02

Asel= .127226583D+01

Asel0= .381679789D+01

Abur1= .985936471D-01

Abu10= .295780973D+00

AKK2=-.893532000D+04

AAAA= .107088600D+05

Adan1= .111964933D+01

Ada10= .335894836D+01

Aw1= .819313339D-01

Aw10= .245794028D+00

Aiecl= .941739481D-01

Aiel0= .282521900D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat05.for

Xo=-.208223700D-04

X= .433606500D-04

OMEGA= .216242000D+02

Ghem1= .263350144D+04

Ghe10= .877833717D+03

Ghem2= .104311377D+05

Ghe20= .347704551D+04

Ghne1= .104015967D+05

Ghn10= .346719854D+04

Ghne2= .105482703D+03

Ghn20= .351608973D+02

Gsel= .333009334D+03

Gsel0= .111003099D+03

Gbur1= .445656583D+04

Gbu10= .148552178D+04

AKK1= .149746200D+05

TTc= .483539600D-04

Gdan1= .421097794D+03

Gda10= .140365916D+03

Gw1= .453706882D+04

Gw10= .151235611D+04

Giecl= .394724982D+04

Gie10= .131575000D+04

Stop - Program terminated.

Ahem1= .284791946D+00

Ahe10= .854375932D+00

Ahem2= .719001152D-01

Ahe20= .215700369D+00

Ahne1= .721043142D-01

Ahn10= .216312966D+00

Ahne2= .711017046D+01

Ahn20= .213305137D+02

Asel= .225218913D+01

Asel0= .675656811D+01

Abur1= .168291018D+00

Abu10= .504873108D+00

AKK2=-.146665300D+05

AAAA= .132870600D+05

Adan1= .178105896D+01

Ada10= .534317746D+01

Aw1= .165304964D+00

Aw10= .495914947D+00

Aiecl= .190005709D+00

Aie10= .570017200D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat06.for

Xo=-.190939500D-03

X=-.513366000D-07

OMEGA= .909788600D+00

Ghem1= .306973032D+04

Ghe10= .102324333D+04

Ghem2= .210238725D+05

Ghe20= .700795673D+04

Ghne1= .225012028D+05

Ghn10= .750040012D+04

Ghne2= .425069485D+03

Ghn20= .141689813D+03

Gsel= .553871334D+03

Gsel0= .184623758D+03

Gbur1= .647326985D+04

Gbu10= .215775638D+04

AKK1=-.654056900D+06

TTc=-.141823400D-05

Gdan1= .630521353D+02

Gda10= .210173762D+02

Gw1= .239276047D+05

Gw10= .797586739D+04

Giecl= .208170160D+05

Gie10= .693900400D+04

Stop - Program terminated.

Ahem1= .270382058D+00

Ahe10= .811146260D+00

Ahem2= .394789305D-01

Ahe20= .118436804D+00

Ahne1= .368869170D-01

Ahn10= .110660763D+00

Ahne2= .195262193D+01

Ahn20= .585786643D+01

Asel= .149854298D+01

Asel0= .449562943D+01

Abur1= .128219589D+00

Abu10= .384658809D+00

AKK2= .654305100D+06

AAAA= .165468700D+05

Adan1= .131637096D+02

Ada10= .394911331D+02

Aw1= .346879685D-01

Aw10= .104063917D+00

Aiecl= .398712285D-01

Aie10= .119613700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat07.for

Xo=-.147620200D-03

X= .382747400D-07

OMEGA= .288755600D+01

Ghem1= .293506986D+04

Ghe10= .978356516D+03

Ghem2= .199904801D+05

Ghe20= .666349264D+04

Ghne1= .211254613D+05

Ghn10= .704181967D+04

Ghne2= .237769124D+03

Ghn20= .792563659D+02

Gsel= .534565055D+03

Gsel0= .178188332D+03

Gbur1= .630580103D+04

Gbu10= .210193345D+04

AKK1= .261555600D+07

TTc= .364514900D-06

Gdan1= .315272617D+02

Gda10= .105090861D+02

Gw1= .324569710D+05

Gw10= .108189892D+05

Giecl= .282375634D+05

Giel0= .941252100D+04

Stop - Program terminated.

Ahem1= .243605786D+00

Ahe10= .730817436D+00

Ahem2= .357670250D-01

Ahe20= .107301086D+00

Ahnel= .338454148D-01

Ahn10= .101536255D+00

Ahne2= .300711879D+01

Ahn20= .902135736D+01

Ase1= .133753599D+01

Ase10= .401260840D+01

Abur1= .113387656D+00

Abu10= .340163005D+00

AKK2=-.261529100D+07

AAAA= .153680600D+05

Adan1= .226787853D+02

Ada10= .680363634D+02

Aw1= .220291659D-01

Aw10= .660875049D-01

Aiecl= .253208816D-01

Aiel0= .759626500D-01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat08.for

Xo=-.863709000D-04

X= .233164500D-04

OMEGA= .658820000D+01

Ghem1= .269551341D+04

Ghe10= .898504372D+03

Ghem2= .179973093D+05

Ghe20= .599910245D+04

Ghne1= .192194024D+05

Ghn10= .640646679D+04

Ghne2= .148431293D+03

Ghn20= .494770924D+02

Gsel= .458188525D+03

Gsel0= .152729492D+03

Gbur1= .593753594D+04

Gbu10= .197917843D+04

AKK1= .918058400D+04

TTc= .735563800D-04

Gdan1= .533845443D+03

Gda10= .177948462D+03

Gw1= .722978373D+04

Gw10= .240992765D+04

Giecl= .628991158D+04

Giel0= .209663700D+04

Stop - Program terminated.

Ahem1= .254125985D+00

Ahe10= .762378037D+00

Ahem2= .380612451D-01

Ahe20= .114183748D+00

Ahnel= .356410665D-01

Ahn10= .106923211D+00

Ahne2= .461492981D+01

Ahn20= .138447909D+02

Ase1= .149501780D+01

Ase10= .448505388D+01

Abur1= .115367723D+00

Abu10= .346103206D+00

AKK2=-.887668100D+04

AAAA= .137422900D+05

Adan1= .128314292D+01

Ada10= .384942918D+01

Aw1= .947469558D-01

Aw10= .284240898D+00

Aiecl= .108904552D+00

Aiel0= .326713700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat09.for

Xo=-.209153500D-03

X= .632128300D-06

OMEGA= .301037300D+00

Ghem1= .307993694D+04

Ghe10= .102664554D+04

Ghem2= .211247355D+05

Ghe20= .704157774D+04

Ghnel= .228358294D+05

Ghn10= .761194231D+04

Ghne2= .780047866D+03

Ghn20= .260015927D+03

Gsel= .580261467D+03

Gsel0= .193420468D+03

Gbur1= .644118190D+04

Gbul0= .214706040D+04

AKK1= .209578000D+06

TTc= .426972400D-05

Gdan1= .111366589D+03

Gda10= .371221923D+02

Gwl= .180094553D+05

Gwl0= .600315112D+04

Giecl= .156682259D+05

Giel0= .522274100D+04

Stop - Program terminated.

Ahem1= .430528295D+00

Ahe10= .129158503D+01

Ahem2= .627700167D-01

Ahe20= .188310070D+00

Ahnel= .580666451D-01

Ahn10= .174199954D+00

Ahne2= .169989568D+01

Ahn20= .509968760D+01

Asel= .228517673D+01

Asel0= .685553092D+01

Abur1= .205862840D+00

Abul0= .617588587D+00

AKK2=-.209334600D+06

AAAA= .171004000D+05

Adan1= .119066231D+02

Ada10= .357198732D+02

Aw1= .736279903D-01

Aw10= .220883995D+00

Aiecl= .846298748D-01

Aiel0= .253889700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat09.for

Xo=-.209153500D-03

X= .632128300D-06

OMEGA= .301037300D+00

Ghem1= .307993694D+04

Ghe10= .102664554D+04

Ghem2= .211247355D+05

Ghe20= .704157774D+04

Ghnel= .228358294D+05

Ghn10= .761194231D+04

Ghne2= .780047866D+03

Ghn20= .260015927D+03

Gsel= .580261467D+03

Gsel0= .193420468D+03

Gbur1= .644118190D+04

Gbul0= .214706040D+04

AKK1= .209578000D+06

TTc= .426972400D-05

Gdan1= .111366589D+03

Gda10= .371221923D+02

Gwl= .180094553D+05

Gwl0= .600315112D+04

Giecl= .156682259D+05

Giel0= .522274100D+04

Stop - Program terminated.

Ahem1= .430528295D+00

Ahe10= .129158503D+01

Ahem2= .627700167D-01

Ahe20= .188310070D+00

Ahnel= .580666451D-01

Ahn10= .174199954D+00

Ahne2= .169989568D+01

Ahn20= .509968760D+01

Asel= .228517673D+01

Asel0= .685553092D+01

Abur1= .205862840D+00

Abul0= .617588587D+00

AKK2=-.209334600D+06

AAAA= .171004000D+05

Adan1= .119066231D+02

Ada10= .357198732D+02

Aw1= .736279903D-01

Aw10= .220883995D+00

Aiecl= .846298748D-01

Aiel0= .253889700D+00

fur00

File name missing or blank - try again!

UNIT 3 ? dat10.for

Xo=-.150240400D-03

X= .357518700D-07

OMEGA= .253894100D+01

Ghem1= .285464161D+04

Ghe10= .951547100D+03

Ghem2= .198550211D+05

Ghe20= .661833966D+04

Ghne1= .210374283D+05

Ghn10= .701247535D+04

Ghne2= .252933372D+03

Ghn20= .843111147D+02

Gsel= .538468997D+03

Gsel0= .179489646D+03

Gbur1= .623391471D+04

Gbu10= .207797134D+04

AKK1= .423871500D+07

TTc= .226486800D-06

Gdan1= .243583225D+02

Gda10= .811943994D+01

Gwl= .366255889D+05

Gwl0= .122085283D+05

Giecl= .318642619D+05

Gie10= .106214200D+05

Stop - Program terminated.

Ahem1= .331039805D+00

Ahe10= .993119521D+00

Ahem2= .475950136D-01

Ahe20= .142785056D+00

Ahne1= .449199391D-01

Ahn10= .134759832D+00

Ahne2= .373616180D+01

Ahn20= .112084866D+02

Asel= .175497569D+01

Asel0= .526492764D+01

Abur1= .151590139D+00

Abu10= .454770468D+00

AKK2=-.423844400D+07

AAAA= .150202000D+05

Adan1= .387957751D+02

Ada10= .116387338D+03

Aw1= .258016329D-01

Aw10= .774049071D-01

Aiecl= .296570497D-01

Aie10= .889711500D-01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat11.for

Xo=-.598218200D-04

X= .794909900D-05

OMEGA= .637247500D+01

Ghem1= .290096038D+04

Ghe10= .966986690D+03

Ghem2= .185384059D+05

Ghe20= .617946796D+04

Ghne1= .192517954D+05

Ghn10= .641726443D+04

Ghne2= .160267098D+03

Ghn20= .534223601D+02

Gsel= .489821716D+03

Gsel0= .163273888D+03

Gbur1= .615022305D+04

Gbu10= .205007413D+04

AKK1= .195384300D+05

TTc= .387813600D-04

Gdan1= .374393353D+03

Gda10= .124797771D+03

Gwl= .892620141D+04

Gwl0= .297540015D+04

Giecl= .776579504D+04

Gie10= .258859800D+04

Stop - Program terminated.

Ahem1= .245091248D+00

Ahe10= .735273822D+00

Ahem2= .383528122D-01

Ahe20= .115058449D+00

Ahne1= .369316205D-01

Ahn10= .110794873D+00

Ahne2= .443634414D+01

Ahn20= .133090339D+02

Asel= .145154855D+01

Asel0= .435464611D+01

Abur1= .115605563D+00

Abu10= .346816727D+00

AKK2=-.192644800D+05

AAAA= .149266800D+05

Adan1= .189907218D+01

Ada10= .569721715D+01

Aw1= .796531433D-01

Aw10= .238959456D+00

Aiecl= .915553393D-01

Aie10= .274666000D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat12.for

Xo=-.620566600D-04

X= .308434800D-04

OMEGA= .130814800D+02

Ghem1= .267104348D+04

Ghe10= .890347729D+03

Ghem2= .149462763D+05

Ghe20= .498209158D+04

Ghnel= .161619800D+05

Ghn10= .538732610D+04

Ghne2= .116128250D+03

Ghn20= .387094125D+02

Gsel= .419117966D+03

Gsel0= .139705974D+03

Gbur1= .536222583D+04

Gbul0= .178740842D+04

AKK1= .566611200D+04

TTc= .107930900D-03

Gdan1= .685100029D+03

Gdal0= .228366652D+03

Gwl= .534202568D+04

Gwl0= .178067504D+04

Giecl= .464756215D+04

Giel0= .154918700D+04

Stop - Program terminated.

Ahem1= .221261842D+00

Ahe10= .663785598D+00

Ahem2= .395416214D-01

Ahe20= .118624877D+00

Ahnel= .365673017D-01

Ahn10= .109701917D+00

Ahne2= .508920094D+01

Ahn20= .152676045D+02

Asel= .141010419D+01

Ase10= .423031302D+01

Abur1= .110215425D+00

Abul0= .330646311D+00

AKK2=-.535238100D+04

AAAA= .135812700D+05

Adan1= .862647753D+00

Adal0= .258794354D+01

Aw1= .110632190D+00

Aw10= .331896606D+00

Aiecl= .127163442D+00

Aiel0= .381490300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat13.for

Xo=-.150494700D-03

X= .343802500D-07

OMEGA= .844259100D+00

Ghem1= .255931349D+04

Ghe10= .853104406D+03

Ghem2= .508508828D+03

Ghe20= .169502924D+03

Ghnel= .543481582D+03

Ghn10= .181160508D+03

Ghne2= .401190737D+03

Ghn20= .133730231D+03

Gsel= .508212247D+03

Gsel0= .169404064D+03

Gbur1= .588305395D+04

Gbul0= .196101777D+04

AKK1= .873553100D+06

TTc= .113789600D-05

Gdan1= .132716760D+01

Gdal0= .442389151D+00

Gwl= .150133878D+06

Gwl0= .500446204D+05

Giecl= .130616475D+06

Giel0= .435388200D+05

Stop - Program terminated.

Ahem1= .102957297D+01

Ahe10= .308871925D+01

Ahem2= .518181761D+01

Ahe20= .155454545D+02

Ahnel= .484837037D+01

Ahn10= .145451127D+02

Ahne2= .656794825D+01

Ahn20= .197038469D+02

Asel= .518484160D+01

Ase10= .155545265D+02

Abur1= .447896623D+00

Abul0= .134369002D+01

AKK2=-.873552900D+06

AAAA= .139629300D+05

Adan1= .198543123D+04

Adal0= .595629435D+04

Aw1= .175510021D-01

Aw10= .526530120D-01

Aiecl= .201735654D-01

Aiel0= .605207000D-01

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat14.for

Xo=-.765942000D-04

X=-.265609300D-04

OMEGA= .530433300D+01

Ghem1= .198855612D+04

Ghe10= .662851968D+03

Ghem2= .168166863D+05

Ghe20= .560556148D+04

Ghnel= .160662838D+05

Ghn10= .535542735D+04

Ghne2= .221149660D+03

Ghn20= .737165455D+02

Gsel= .685610923D+03

Gsel0= .228536950D+03

Gbur1= .506604702D+04

Gbu10= .168868216D+04

AKK1=-.410638900D+04

TTc=-.137942100D-03

Gdan1= .503308187D+03

Gda10= .167769378D+03

Gwl= .648371784D+04

Gwl0= .216123905D+04

Giecl= .564083467D+04

Giel0= .188027800D+04

Stop - Program terminated.

Ahem1= .809632670D+00

Ahe10= .242889827D+01

Ahem2= .957382432D-01

Ahe20= .287214761D+00

Ahnel= .100209857D+00

Ahn10= .300629604D+00

Ahne2= .728013779D+01

Ahn20= .218404157D+02

Asel= .234827064D+01

Ase10= .704481267D+01

Abur1= .317802024D+00

Abu10= .953406176D+00

AKK2= .447073500D+04

AAAA= .104660600D+05

Adan1= .319883531D+01

Ada10= .959650696D+01

Aw1= .248314322D+00

Aw10= .744943046D+00

Aiecl= .285418754D+00

Aiel0= .856256300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat14.for

Xo=-.765942000D-04

X=-.265609300D-04

OMEGA= .530433300D+01

Ghem1= .198855612D+04

Ghe10= .662851968D+03

Ghem2= .168166863D+05

Ghe20= .560556148D+04

Ghnel= .160662838D+05

Ghn10= .535542735D+04

Ghne2= .221149660D+03

Ghn20= .737165455D+02

Gsel= .685610923D+03

Gsel0= .228536950D+03

Gbur1= .506604702D+04

Gbu10= .168868216D+04

AKK1=-.410638900D+04

TTc=-.137942100D-03

Gdan1= .503308187D+03

Gda10= .167769378D+03

Gwl= .648371784D+04

Gwl0= .216123905D+04

Giecl= .564083467D+04

Giel0= .188027800D+04

Stop - Program terminated.

Ahem1= .809632670D+00

Ahe10= .242889827D+01

Ahem2= .957382432D-01

Ahe20= .287214761D+00

Ahnel= .100209857D+00

Ahn10= .300629604D+00

Ahne2= .728013779D+01

Ahn20= .218404157D+02

Asel= .234827064D+01

Ase10= .704481267D+01

Abur1= .317802024D+00

Abu10= .953406176D+00

AKK2= .447073500D+04

AAAA= .104660600D+05

Adan1= .319883531D+01

Ada10= .959650696D+01

Aw1= .248314322D+00

Aw10= .744943046D+00

Aiecl= .285418754D+00

Aiel0= .856256300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat15.for

Xo=-.440170900D-04

X= .120210100D-06

OMEGA= .123058500D+02

Ghem1= .176768829D+04

Ghe10= .589229366D+03

Ghem2= .133206758D+05

Ghe20= .444022479D+04

Ghne1= .137615652D+05

Ghn10= .458718789D+04

Ghne2= .126194606D+03

Ghn20= .420648642D+02

Gsel= .513315599D+03

Gsel0= .171105181D+03

Gbur1= .445446351D+04

Gbu10= .148482101D+04

AKK1= .207562900D+07

TTc= .452904200D-06

Gdan1= .278322108D+02

Gda10= .927740258D+01

Gwl= .231969025D+05

Gwl0= .773229999D+04

Giecl= .201813057D+05

Giel0= .672710100D+04

Stop - Program terminated.

Ahem1= .806137603D+00

Ahe10= .241841307D+01

Ahem2= .106976554D+00

Ahe20= .320929698D+00

Ahne1= .103549268D+00

Ahn10= .310647838D+00

Ahne2= .112920833D+02

Ahn20= .338762534D+02

Ase1= .277606993D+01

Ase10= .832821069D+01

Abur1= .319903844D+00

Abu10= .959711637D+00

AKK2=-.207518200D+07

AAAA= .916296500D+04

Adan1= .511996698D+02

Ada10= .153599026D+03

Aw1= .614306156D-01

Aw10= .184291867D+00

Aiecl= .706099010D-01

Aiel0= .211829700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat16.for

Xo=-.113834800D-03

X=-.115268800D-03

OMEGA= .561571900D+01

Ghem1= .311477154D+04

Ghe10= .103825707D+04

Ghem2= .213508654D+05

Ghe20= .711695435D+04

Ghne1= .182618876D+05

Ghn10= .608729521D+04

Ghne2= .171203197D+03

Ghn20= .570677263D+02

Gsel= .588396987D+03

Gsel0= .196132308D+03

Gbur1= .607437850D+04

Gbu10= .202479261D+04

AKK1=-.141280600D+04

TTc=-.354600300D-03

Gdan1= .938174137D+03

Gda10= .312724679D+03

Gwl= .556015898D+04

Gwl0= .185338613D+04

Giecl= .483733849D+04

Giel0= .161244600D+04

Stop - Program terminated.

Ahem1= .513681333D+00

Ahe10= .154104417D+01

Ahem2= .749384146D-01

Ahe20= .224815268D+00

Ahne1= .876141632D-01

Ahn10= .262842518D+00

Ahne2= .934561985D+01

Ahn20= .280368626D+02

Ase1= .271925254D+01

Ase10= .815775850D+01

Abur1= .263401433D+00

Abu10= .790204384D+00

AKK2= .161328100D+04

AAAA= .177097200D+05

Adan1= .170544032D+01

Ada10= .511632151D+01

Aw1= .287761556D+00

Aw10= .863284762D+00

Aiecl= .330760397D+00

Aiel0= .992281300D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat17.for

Xo=-.241221900D-04

X= .349687400D-04

OMEGA= .220678400D+02

Ghem1= .221299251D+04

Ghe10= .737664091D+03

Ghem2= .111467173D+05

Ghe20= .371557205D+04

Ghnel= .113675263D+05

Ghn10= .378917501D+04

Ghne2= .841287205D+02

Ghn20= .280429038D+02

Gsel= .318568675D+03

Gsel0= .106189547D+03

Gbur1= .437629276D+04

Gbu10= .145876410D+04

AKK1= .159404700D+05

TTc= .447436400D-04

Gdan1= .371236081D+03

Gda10= .123745347D+03

Gw1= .527000706D+04

Gw10= .175666883D+04

Giecl= .458490585D+04

Giel0= .152830200D+04

Stop - Program terminated.

Ahem1= .501583261D+00

Ahe10= .150474995D+01

Ahem2= .995808870D-01

Ahe20= .298742693D+00

Ahnel= .976465745D-01

Ahn10= .292939755D+00

Ahne2= .131940673D+02

Ahn20= .395822062D+02

Asel= .348433505D+01

Asel0= .104530063D+02

Abur1= .253639338D+00

Abu10= .760918096D+00

AKK2=-.155732200D+05

AAAA= .112224000D+05

Adan1= .299001109D+01

Ada10= .897003425D+01

Aw1= .210625904D+00

Aw10= .631877780D+00

Aiecl= .242098755D+00

Aiel0= .726296400D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat18.for

Xo=-.882350500D-04

X= .262827700D-06

OMEGA= .584458300D+01

Ghem1= .231313262D+04

Ghe10= .771044122D+03

Ghem2= .167329663D+05

Ghe20= .557765484D+04

Ghnel= .175015650D+05

Ghn10= .583385436D+04

Ghne2= .139824644D+03

Ghn20= .466082097D+02

Gsel= .427847447D+03

Gsel0= .142615800D+03

Gbur1= .543867398D+04

Gbu10= .181289113D+04

AKK1= .576767900D+06

TTc= .158956400D-05

Gdan1= .595329373D+02

Gda10= .198443103D+02

Gw1= .200431698D+05

Gw10= .668105587D+04

Giecl= .174375574D+05

Giel0= .581251900D+04

Stop - Program terminated.

Ahem1= .566331559D+00

Ahe10= .169899486D+01

Ahem2= .782885696D-01

Ahe20= .234865734D+00

Ahnel= .748504493D-01

Ahn10= .224551372D+00

Ahne2= .936887776D+01

Ahn20= .281066363D+02

Asel= .306183900D+01

Asel0= .918551799D+01

Abur1= .240867536D+00

Abu10= .722602686D+00

AKK2=-.576436000D+06

AAAA= .120499000D+05

Adan1= .220046257D+02

Ada10= .660138842D+02

Aw1= .653589235D-01

Aw10= .196076792D+00

Aiecl= .751252008D-01

Aiel0= .225375600D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat19.for

Xo=-.720964800D-04

X= .255023600D-06

OMEGA= .784783600D+01

Ghem1= .205315669D+04

Ghe10= .684385490D+03

Ghem2= .156508364D+05

Ghe20= .521694491D+04

Ghnel= .163304123D+05

Ghn10= .544347019D+04

Ghne2= .195155334D+03

Ghn20= .650517708D+02

Gsel= .677109096D+03

Gsel0= .225703008D+03

Gbur1= .510053657D+04

Gbu10= .170017867D+04

AKK1= .713254400D+06

TTc= .128838300D-05

Gdan1= .508296618D+02

Gda10= .169432188D+02

Gwl= .201753930D+05

Gwl0= .672513026D+04

Giecl= .175525930D+05

Giel0= .585086400D+04

Stop - Program terminated.

Ahem1= .808511112D+00

Ahe10= .242553360D+01

Ahem2= .106064619D+00

Ahe20= .318193891D+00

Ahnel= .101650832D+00

Ahn10= .304952529D+00

Ahne2= .850604475D+01

Ahn20= .255181370D+02

Ase1= .245159903D+01

Ase10= .735479787D+01

Abur1= .325455955D+00

Abu10= .976367970D+00

AKK2=-.712874800D+06

AAAA= .106817400D+05

Adan1= .326580965D+02

Ada10= .979743001D+02

Aw1= .822784470D-01

Aw10= .246835368D+00

Aiecl= .945729215D-01

Aiel0= .283718800D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat20.for

Xo=-.412997100D-04

X= .121749600D-06

OMEGA= .102674300D+02

Ghem1= .147633557D+04

Ghe10= .492111804D+03

Ghem2= .127553114D+05

Ghe20= .425177002D+04

Ghnel= .132174482D+05

Ghn10= .440581560D+04

Ghne2= .808483587D+02

Ghn20= .269494500D+02

Gsel= .320594959D+03

Gsel0= .106864975D+03

Gbur1= .417840607D+04

Gbu10= .139280187D+04

AKK1= .144370200D+07

TTc= .643229200D-06

Gdan1= .300889076D+02

Gda10= .100296348D+02

Gwl= .214385644D+05

Gwl0= .714618736D+04

Giecl= .186515509D+05

Giel0= .621718300D+04

Stop - Program terminated.

Ahem1= .159855256D+01

Ahe10= .479565819D+01

Ahem2= .185020963D+00

Ahe20= .555062948D+00

Ahnel= .178551863D+00

Ahn10= .535655646D+00

Ahne2= .291904503D+02

Ahn20= .875713605D+02

Ase1= .736131350D+01

Ase10= .220839429D+02

Abur1= .564808676D+00

Abu10= .169442621D+01

AKK2=-.144317700D+07

AAAA= .775917400D+04

Adan1= .784342200D+02

Ada10= .235302685D+03

Aw1= .110081998D+00

Aw10= .330246029D+00

Aiecl= .126531033D+00

Aiel0= .379593100D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat21.for

Xo=-.270153500D-04

X= .288788400D-06

OMEGA= .221316400D+02

Ghem1= .152433099D+04

Ghe10= .508110274D+03

Ghem2= .108328326D+05

Ghe20= .361094380D+04

Ghnel= .111359798D+05

Ghn10= .371199288D+04

Ghne2= .829210524D+02

Ghn20= .276403478D+02

Gsel= .393241296D+03

Gsel0= .131080418D+03

Gbur1= .389085975D+04

Gbul0= .129695311D+04

AKK1= .130483800D+07

TTc= .710246400D-06

Gdan1= .325340867D+02

Gda10= .108446944D+02

Gwl= .176371896D+05

Gwl0= .587906255D+04

Giecl= .153443544D+05

Giel0= .511478400D+04

Stop - Program terminated.

Ahem1= .826592131D+00

Ahe10= .247977666D+01

Ahem2= .116313069D+00

Ahe20= .348939244D+00

Ahnel= .113146757D+00

Ahn10= .339440306D+00

Ahne2= .151951762D+02

Ahn20= .455855335D+02

Asel= .320413958D+01

Asel0= .961241978D+01

Abur1= .323835882D+00

Abul0= .971507751D+00

AKK2=-.130432600D+07

AAAA= .786017900D+04

Adan1= .387286114D+02

Ada10= .116185847D+03

Aw1= .714399534D-01

Aw10= .214319883D+00

Aiecl= .821148919D-01

Aiel0= .246344700D+00

B>fur00

File name missing or blank - try again!

UNIT 3 ? dat22.for

Xo=-.459328500D-04

X= .155502900D-04

OMEGA= .521017900D-02

Ghem1= .226298875D+04

Ghe10= .754329503D+03

Ghem2= .176274068D+05

Ghe20= .587580162D+04

Ghnel= .183058947D+05

Ghn10= .610196423D+04

Ghne2= .741556414D+03

Ghn20= .247185445D+03

Gsel= .446933606D+03

Gsel0= .148977852D+03

Gbur1= .554160635D+04

Gbul0= .184720192D+04

AKK1= .196248300D+05

TTc= .374004800D-04

Gdan1= .328053220D+03

Gda10= .109351062D+03

Gwl= .905344768D+04

Gwl0= .301781557D+04

Giecl= .787649944D+04

Giel0= .262550000D+04

Stop - Program terminated.

Ahem1= .649583431D+00

Ahe10= .194875050D+01

Ahem2= .833928677D-01

Ahe20= .250178630D+00

Ahnel= .803020026D-01

Ahn10= .240906034D+00

Ahne2= .198231715D+01

Ahn20= .594695210D+01

Asel= .328907914D+01

Asel0= .986723849D+01

Abur1= .265266045D+00

Abul0= .795798221D+00

AKK2=-.192622100D+05

AAAA= .113398100D+05

Adan1= .448098025D+01

Ada10= .134429422D+02

Aw1= .162369083D+00

Aw10= .487107302D+00

Aiecl= .186631131D+00

Aiel0= .559893400D+00

B>

C
C
C
C

***** 2-PHASE CRITICAL FLOW MODEL *****

```
DOUBLE PRECISION Ghem1,Ahem1,Ghem2,Ahem2,Ghne1,Ahne1
DOUBLE PRECISION Ghne2,Ahne2,Gsel,Asel,Gbur1,Abur1,Gdan1,Adan1
DOUBLE PRECISION Ghe10,Ahe10,Ghe20,Ahe20,Ghn10,Ahn10
DOUBLE PRECISION Ghn20,Ahn20,Gsel0,Asel0,Gbul0,Abul0
DOUBLE PRECISION Gdal0,Adal0,Gwl,Awl,Gwl0,Awl0,Giec1
DOUBLE PRECISION Aiec1,Giec10,Aiec10
```

C

```
DIMENSION Z(30)
OPEN (3,FILE=' ')
READ (3,*) (Z(I),I=1,23)
DO 230 I=1,23
```

230

```
CONTINUE
Po=Z(1)
To=Z(2)
Pl=Z(3)
Ps=Z(4)
Gm=Z(5)
Vo=Z(6)
VVo=Z(7)
VVf=Z(8)
VVg=Z(9)
Vfgo=Z(10)
Cfo=Z(11)
Hfgo=Z(12)
Ho=Z(13)
Hfg=Z(14)
Tl=Z(15)
Cf=Z(16)
AKg=Z(17)
AKf=Z(18)
Cg=Z(19)
V=Z(20)
Vfg=Z(21)
Vhne=Z(22)
H=Z(23)
```

C

```

C
      Ff=.96-.28*SQRT(Ps/2255600)
      Pc=Ff*Ps
      ETs=Ps/Po
      ETc=Pc/Po
      VVfg=VVg-VVf
      Xo=(Vo-VVf)/(VVg-VVf)
      WRITE(*,80) Xo
80    FORMAT(4H Xo=,D15.9)
      ggc=9.80665
      Vfo=Vo-Xo*Vfgo
      Vgo=Vfgo+Vfo
      Cfg=ABS(Cg-Cf)
      XXX=Cf*T1*ALOG(To/T1)+(Xo*Hfgo*T1)/To
      XX=Hfg-Cfg*T1*ALOG(To/T1)
      X=XXX/XX
      WRITE(*,90) X
90    FORMAT(3H X=,D15.9)
      C=Cf+X*Cfg
      AK=AKf+X*(AKg-AKf)
      Vf=ABS(V-X*Vfg)
      Vg=Vfg-Vf
      Vfhne=Vhne-Xo*Vfg
      Hfo=Ho-Xo*Hfgo
      Hgo=Hfgo+Hfo
      ROfo=1./Vfo

C
C    HEM
C
      OMEGA=(Cfo*To*Ps*(Vfgo**2))/(Vfo*427.0*(Hfgo**2))
      WRITE(*,101) OMEGA
101   FORMAT(7H OMEGA=,D15.9)
      IF(Po*ROfo*ggc/(OMEGA*ETs)) 100,100,200
200   Gc=ETc*SQRT((Po*ROfo*ggc)/(OMEGA*ETs))
      F1=3.14159*.0024*.0254*3600.
      F10=3.14159*.0008*.0254*3600.
      Ghem1=Gc*F1
      Ghe10=Gc*F10
      Ahem1=Gm/Ghem1
      Ahe10=Gm/Ghe10
      GO TO 110

C
100   IF(Po*ggc/Vf) 21,400,400
400   IF(X*Vg/Vf+(1.-X)) 401,21,401
401   A=(SQRT((Po*ggc)/Vf))/((X*Vg)/Vf+(1.-X))
      B=2.*(1.-ETc)
      D=(2.*C*To)/(Po*Vf)
      E=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)
      F=(T1/To)*ALOG(T1/To)
      IF(B+D*(E+F)) 21,500,500
500   Gc=A*(SQRT(B+D*(E+F)))
      Ghem2=Gc*F1
      Ghe20=Gc*F10
      Ahem2=Gm/Ghem2
      Ahe20=Gm/Ghe20
      GO TO 120

C

```

HNE

```

C
C
21 IF(Vf) 31,600,31
31 G=SQRT((Po*ggc)/Vf)
AAK=1./AK
EETc=ETc**AAK
O=1.+Xo*(Vgo/(Vfo*EETc)-1.)
IF((1.-AK)-(1.-ETc)) 23,600,23
23 Q=2.*Xo*(((AK*Vgo/Vfo)-ETc**((ABS((AK-1.)/AK)))/(1.-AK)-(1.-ETc))
IF((G+Q)/O) 600,700,700
IF(O) 700,600,700
700 Gc=G*(SQRT((B+Q)/O))
Ghne1=Gc*F1
Ghn10=Gc*F10
Ahne1=Gm/Ghne1
Ahn10=Gm/Ghn10
GO TO 130

```

```

C
600 P=SQRT((Po*ggc)/Vfhne)
IF(X-.14) 1,2,2
1 AN=7.*X
2 AN=1.
IF(Cg) 33,800,33
33 IF(((1.-Xo)*C*ETc)/Cg) 22,800,22
22 R=((Xo*Vg)/Vfhne)/(((1.-Xo)*C*ETc)/Cg)
IF(C*T1) 32,800,32
32 S=AN*OMEGA*(1.-(X*Hfg)/(C*T1))
Gc=P/(SQRT(ABS(R+S)))
Ghne2=Gc*F1
Ghn20=Gc*F10
Ahne2=Gm/Ghne2
Ahn20=Gm/Ghn20
GO TO 140

```

SE

```

C
C
C
800 SS=(Vg/Vf)**(1./3.)
IF(X+(1.-X)/SS**2) 11,12,12
12 TTT=((X*Vg)/Vf+(1.-X)*SS)*(SQRT(X+(1.-X)/SS**2))
U=(2.*C*To)/(Po*Vf)
W=(1.+(Xo*Hfgo)/(C*To))*(1.-T1/To)+(T1/To)*ALOG(T1/To)
IF(P+U*W) 11,13,13
13 IF(TTT) 29,11,29
29 Gc=(P*(SQRT(B+U*W)))/TTT
Gsel=Gc*F1
Gsel0=Gc*F10
Asel=Gm/Gsel
Asel0=Gm/Gsel0
GO TO 150
C

```

C Burnel***HNE***

C
11 CC=.294*(75.48-.14*(T1-273.15))/49.2
C CC=1.-Pc/Ps
IF(2.*ROfo*(Po-(1.-CC)*Ps)) 14,15,15
15 Gc=SQRT(2.*ROfo*(Po-(1.-CC)*Ps))
Gbur1=Gc*F1
Gbul0=Gc*F10
Abur1=Gm/Gbur1
Abul0=Gm/Gbul0
GO TO 160

C
C D.M.Dancer***HEM***
C

14 AAAA=((4186.8*Hfgo)/To)/Vfgo
VVVV=V/Vf
TTTT=(T1-To)/To
IF(1.-VVVV) 24,16,24
24 IF(AAAA*Vf) 34,16,34
34 AKK1=((4186.8*Cf*VVVV)/(Vf*AAAA)-(1.-VVVV)/TTTT)/(VVVV-1.)
AKK2=(4186.8*Cf)/(Vf*AAAA)-AKK1
IF(AKK1) 26,16,26
26 IF(AKK2) 28,16,28
28 AKKK=ABS(((AKK1+AKK2)/AKK2))
TTc=(1./AKK1)*(1.-(AKKK*(1./3.))
IF(1.-AKK1*TTc) 27,16,27
27 Y=ABS(-TTc+.5*AKK1*(TTc**2))
WRITE(*,102) AKK1,AKK2,AAAA
102 FORMAT(6H AKK1=,D15.9,5X,5HAKK2=,D15.9,5X,5HAAAA=,D15.9)
WRITE(*,122) TTc
122 FORMAT(5H TTc=,D15.9)
Gcc=((1.+AKK2*TTc)*SQRT(Y))/(1.-AKK1*TTc)
IF((2.*AAAA*To)/Vf) 16,17,17
17 Gc=Gcc*SQRT(ABS((2.*AAAA*To)/Vf))
Gdan1=Gc*F1
Gdal0=Gc*F10
Adan1=Gm/Gdan1
Adal0=Gm/Gdal0
GO TO 170

C
C G.F.BROCKETT & C.F.KING
C

183 ROo=ROfo/gc
Gc=50.4*SQRT(ABS(ROo*(1.-ETc)*Po))
Gw1=Gc*F1
Gw10=Gc*F10
Aw1=Gm/Gw1
Aw10=Gm/Gw10
GO TO 180

C

C IEC

C

```

193 FL=.87
    Gc=50.4*FL*SQRT(ABS((Po-Ff*Ps)*ROo))
    Giecl=Gc*F1
    Giel0=Gc*F10
    Aiecl=Gm/Giecl
    Aiel0=Gm/Giel0
    GO TO 190

```

C

C

```

110 WRITE(*,10) Ghem1,Ahem1
10  FORMAT(7H Ghem1=,D15.9,5X,6HAhem1=,D15.9)
    WRITE(*,113) Ghe10,Ahe10
113 FORMAT(7H Ghe10=,D15.9,5X,6HAhe10=,D15.9)
    GO TO 100
120 WRITE(*,20) Ghem2,Ahem2
20  FORMAT(7H Ghem2=,D15.9,5X,6HAhem2=,D15.9)
    WRITE(*,114) Ghe20,Ahe20
114 FORMAT(7H Ghe20=,D15.9,5X,6HAhe20=,D15.9)
    GO TO 21
130 WRITE(*,30) Ghnel,Ahnel
30  FORMAT(7H Ghnel=,D15.9,5X,6HAhnel=,D15.9)
    WRITE(*,115) Ghn10,Ahn10
115 FORMAT(7H Ghn10=,D15.9,5X,6HAhn10=,D15.9)
    GO TO 600
140 WRITE(*,40) Ghne2,Ahne2
40  FORMAT(7H Ghne2=,D15.9,5X,6HAhne2=,D15.9)
    WRITE(*,119) Ghn20,Ahn20
119 FORMAT(7H Ghn20=,D15.9,5X,6HAhn20=,D15.9)
    GO TO 800
150 WRITE(*,50) Gsel,Asel
50  FORMAT(6H Gsel=,D15.9,6X,5HAsel=,D15.9)
    WRITE(*,121) Gsel0,Asel0
121 FORMAT(7H Gsel0=,D15.9,5X,6HAsel0=,D15.9)
    GO TO 11
160 WRITE(*,60) Gbur1,Abur1
60  FORMAT(7H Gbur1=,D15.9,5X,6HAbur1=,D15.9)
    WRITE(*,117) Gbu10,Abu10
117 FORMAT(7H Gbu10=,D15.9,5X,6HAbu10=,D15.9)
    GO TO 14
170 WRITE(*,70) Gdan1,Adan1
70  FORMAT(7H Gdan1=,D15.9,5X,6HAdan1=,D15.9)
    WRITE(*,118) Gdal0,Adal0
118 FORMAT(7H Gdal0=,D15.9,5X,6HAdal0=,D15.9)
    GO TO 183
180 WRITE(*,181) Gw1,Aw1
181 FORMAT(5H Gw1=,D15.9,5X,4HAW1=,D15.9)
    WRITE(*,182) Gw10,Aw10
182 FORMAT(6H Gw10=,D15.9,5X,5HAW10=,D15.9)
    GO TO 193
190 WRITE(*,191) Giecl,Aiecl
191 FORMAT(7H Giecl=,D15.9,5X,6HAiecl=,D15.9)
    WRITE(*,192) Giel0,Aiel0
192 FORMAT(7H Giel0=,D15.9,5X,6HAiel0=,D15.9)
16  STOP
    END

```

7)

```
C      FUNCTION AJBES(NN,X)
      BESSEL FUNCTION J
      ONE=1.
      E25=1.E-25
      N=IABS(NN)
      XA=ABS(X)
      IF(N-30000) 8,900,900
8      IF(XA-3.E4) 9,900,900
9      CONTINUE
      IF(XA-2.E-5) 1,1,10
1     IF(N) 3,2,3
2     AJABES=ONE
      GO TO 1000
3     IF(N-7) 4,500,500
4     T1=.5*X
      T2=ONE
      T3=ONE
      DO 5 I=1,N
      T3=T3*T1/T2
      T2=T2+ONE
5     CONTINUE
      BJ=T3
      GO TO 300
10    Z=2./X
      IF(XA-100.) 92,91,91
91    L=.05*XA+28.
      GO TO 15
92    IF(XA-10.) 94,93,93
93    L=.2*XA+13.
      GO TO 15
94    IF(XA-1.) 96,96,95
95    L=XA+5.
      GO TO 15
96    L=6
15    NM=MAX0(N,IFIX(XA))+L
20    T3=0.
      T2=1.E-35
      S=0.
      IF(MOD(NM,2)) 22,21,22
21    NM=NM+1
22    DO 100 I=1,NM,2
      K=NM-I+1
      T1=FLOAT(K+1)*T2*Z-T3
      IF(N-K) 50,45,50
```

```

45      QJ=T1
50      S=S+T1
        IF(ABS(S)-1.E25) 80,60,60
60      T1=T1*E25
        T2=T2*E25
        S=S*E25
        IF(N-K) 80,70,70
70      QJ=QJ*E25
80      T3=T2
        T2=T1
100     CONTINUE
        S=S+S-T1
        BJ=QJ/S
300     IF(NN) 700,600,600
500     AJBES=0.
        GO TO 1000
600     AJBES=BJ
        AJBES=AJBES*10.E5
        GO TO 1000
700     IF(MOD(N,2)) 800,600,800
800     AJBES=-BJ
        AJBES=AJBES*10.E5
        GO TO 1000
900     WRITE(*,1001) NN,X
        GO TO 500
1000    RETURN
1001    FORMAT(16H NOT ACCURATE N=,I7,10X,2HX=,E14.7)
        END

```

```

C      ***** FUR11.FOR *****
        INTEGER T,P(70),T0
        P(T0)=0
        P0=1.4
        R1=1.
        T=1
        DO 10 I=1,50
            T=T+1
            P(T0)=T*P(T0)
            P(I)=P(T0)+T
            G=SQRT(ABS(2*(P0-P(I))*R1+AJBES(NN,X)**2))
            WRITE(*,30) P(I),G
30      FORMAT(1H ,I6,E14.6)
            IF(G-22500.) 10,40,40
10      CONTINUE
40      WRITE(*,20) P(I),G
20      FORMAT(1H ,I6,E14.6)
        STOP
        END

```

I).

```

FUNCTION OMEGA(PS,TO)
INTEGER TO
CFO=1.
VFO=1.
TO=120.5
PS=1.4
OMEGA=1.4
HFGO=538.99
VF=1.
VG=12.4
VFGO=VG-VF
DO 1 I=1,200.2
BI=I
TO=TO+BI
DO 10 J=1,100
AJ=J
PS=PS+AJ
PS=(3./5.)*TANH(PS)
10 OMEGA=((CFO*TO*PS)/VFO)*(VFGO/HFGO)**2
1 CONTINUE
RETURN
END

```

```

C *** J.C. LEUNG & M.A. GROLMES ***
REAL KK
INTEGER TO
P0=1.5
S=3.1415*2.*.8
EATHC=5.
EATHS=2.6
DO 30 J=1,100
P=1.
AJ=J
EJ=EATHS+P+AJ
IF(OMEGA(PS,TO)-1.) 10,20,10
IF(OMEGA(PS,TO)) 10,20,10
10 AA=EJ*2.*OMEGA(PS,TO)/(1.6795*(2.*OMEGA(PS,TO)-1.))
BB=1.-(1.-ABS((2.*OMEGA(PS,TO)-1.)/(2.*OMEGA(PS,TO)*EJ)))*.5
KK=(AA/BB)**2
EEJ=EJ-4.5
IF(KK-500) 30,30,50
50 WRITE(*,40) EEJ, KK
40 FORMAT(1H ,F5.1,E15.6)
30 CONTINUE
20 STOP
END

```